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## CONTENTS

Editorial Notes	PAGE
Reactions to Nationalisation Proposals	553
The Peruvian Corporation	555
Future of the British Machine Tool Industry	555
Locomotives for Colonial Railways	556
Letters to the Editor	559
Publications Received	560
Overseas Railway Affairs—South Africa, Victoria, United States, Mexico, Italy, Austria	562
The Movements of Railway Vehicles on the Track	564
New Steam Locomotives for Swedish State Railways	565
Restoration of French Signalling Installations	566
British Railwaymen in North-West Europe	568
Constructing the Beki Bridge, B.A.R.	568
Personal	571
Staff and Labour Matters	574
Questions in Parliament	574
An Administrative Staff College	576
Notes and News	577
Stock Market and Table	580

## DIESEL RAILWAY TRACTION SUPPLEMENT

The December issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on December 1, price 1s.

## TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.  
The office is closed on Saturdays

## ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

## ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

## Progress of Nationalisation

THE Government is now coming up against the first problems associated with large-scale nationalisation of basic industries. Its progress with the financial details in respect of State ownership of the coal mines is proving more difficult than it had expected, and although it appears likely that the matter will go to arbitration, even the terms of reference are causing headaches in Whitehall. The view is gaining ground, also, that when the Government's transport proposals are put forward, it will be found that the administration has laid up difficulties for itself by its endeavour to sectionalise the industry. The omission of canal carriers, short-distance road haulage undertakings, and presumably bus companies, seems to leave the final co-ordination of internal transport services as remote as ever. Already one can foresee difficulties in the fixing of railway passenger fares as against competing bus services, or of railway freight charges, for example, for coal, against coastwise shipping services. Indeed, the more one studies the little that is yet known of the Government's transport nationalisation proposals, the less practical they appear.

\* \* \* \*

## Industrial Research Survey by F.B.I.

The Industrial Research Committee & Secretariat of the Federation of British Industries has circularised industrial undertakings in a questionnaire designed to establish the facts of Great Britain's industrial research. In the opinion of the Committee, the research effort of British industry has been under-estimated because it is largely unknown. One form of questionnaire has been addressed to all manufacturing concerns in the country which are carrying out research and development, and the second to all firms and organisations offering analytical, testing, consultant, research, or development facilities to industry. The first of these questionnaires asks for detailed information on the staffing and scope of the firm's research department; whether the firm's laboratories cater also for other British companies; what contacts there are with universities and technical colleges; if the research department concerned wishes to be put in touch with others working in the same field, or to exchange scientific and technical information with others at home or abroad. The firms are also asked to outline any plans for development or expansion of research activities during the next two years. The second questionnaire seeks information of the services offered, the field covered by the firm or organisation, and what specialist work is undertaken and equipment possessed.

\* \* \* \*

## An Administrative Staff College

Sponsored by a group of industrialists, an Administrative Staff College is to be established in the near future, at which young business men and industrialists, civil servants, local government and trade union officials, will work in teams on typical trade and business problems. The college has been incorporated as a company, with a court of governors, of which Mr. Geoffrey Heyworth, Chairman of Lever Brothers & Unilever Limited, is Chairman. The students will be nominated by the public services, trades unions, and organisations in which they are employed. They will be selected from among the most promising of rising young administrators. Courses will last three months, and will be attended by some sixty students, normally between the ages of 28 and 34. One aim of the college will be to formulate and expound the basic principles and technique of organisation, administration, and leadership, and another will be to provide an opportunity of pooling experience and of exchanging views and ideas. It is stated that the college is not a profit-making concern; running expenses will be met from fees, but some support from endowment income or guaranteed subscriptions will be required. The necessary annual income of £45,000 is expected to be contributed mainly by seven-year covenants.

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## Asking the Public

The L.N.E.R. states that 17,000 replies were received to the questions put to the travelling public in its booklet "Design for Comfort" which we dealt with in our October 5 issue. On the question of preference for compartment coach or open saloon, the answers revealed that 58 per cent. preferred the compartment type as opposed to the open saloon, and it is interesting that this percentage confirms in a different part of the country the opinion expressed by the Southern Railway passengers on the same point. On the L.N.E.R. the least difference of opinion was shown over the question of wider or deeper windows (as provided in its post-war coach); no less than 88 per cent. voted in favour, 5·6 per cent. were content with the present windows, and 4·4 per

cent. expressed indifference. Opinion was most sharply divided on the provision of "Ladies Only" compartments; 46 per cent. thought them desirable, 48 per cent. considered them unnecessary, and 6 per cent. were indifferent. So the figures were further analysed and it was found that of those who wanted "Ladies Only" compartments provided, men outnumbered women by more than 2 to 1. Other features of design receiving heavy votes were individual lighting control, the provision of both large and small luggage racks, and restful colours for interior decoration. In the "Design for Comfort" booklet passengers were not only asked for their preferences on certain aspects of design but were also invited to submit suggestions. Of these suggestions, more than 20 per cent. related to the introduction of better ventilating and heating arrangements, improved toilet accommodation, with separate compartments for ladies and gentlemen, and facilities for the sale of newspapers, magazines, fruit, chocolate, cigarettes, tobacco, and ices on all long-distance trains.

#### Refreshments on Trains

It is, perhaps, surprising that in the first restoration of travelling refreshment car facilities in Great Britain, more use has not been made of buffet cars. At present the only trains so equipped in the services operative from October 1 are the L.N.E.R. 9.40 a.m. from Kings Cross to Newcastle, and the 12.25 p.m. from Newcastle to Kings Cross. The advantage of buffet car service is that it adds to a train no more than a single car of about 30 tons weight or slightly over, that it can be manned by a staff of two or three, and that it can be maintained, like the refreshment rooms and "railbars," largely with non-rationed food. What most travellers desire, until the reinstatement of full restaurant car service becomes possible, is the possibility of obtaining at least some snack on the train, with a hot or cold drink to wash it down, so that they may be relieved of the necessity of carrying with them packets of sandwiches, thermos flasks, and other similar additions to their luggage. The L.N.E.R., G.W.R., and S.R. all possess numbers of these vehicles, which would prove a most welcome stopgap until more ample facilities become possible. Meantime, the L.M.S.R. deserves congratulation on the scale of its restaurant car recovery already achieved, the culture and courtesy of the service, and the steadily improving quality of the meals, which are attracting very extensive custom.

#### French Railway Recovery

The astonishing rapidity with which the French National Railways have succeeded in restoring their main lines, after the extremely severe damage—especially in destroyed underline bridges—sustained during the war, is seen in the timings of some of the principal main-line services given on p. 507 of our November 16 issue. Between Paris and Lille, for example, railcars are now covering the 160 miles in 3 hr., at an average of 53.3 m.p.h., including stops. On the electrified main line of the South-West Region, the time of the best trains over the 365 miles between Paris and Bordeaux has come down to 7½ hr., which means an average speed of 50.4 m.p.h. overall. Before the war the "Sud Express," the fastest long-distance train in France, required 5½ hr. southbound and 6 hr. 10 min. northbound; the best ordinary expresses took from 7 to 7½ hr., a time which was also maintained by the fastest train during most of the German occupation. In addition to these 7½ hr. trains, Bordeaux also has two expresses in 7½ hr. to and from Paris. The best time over the South-East Region main line between Paris and Lyons, 321 miles, is now 6½ hr. (49.4 m.p.h.), as compared with the 5 hr. 5 min. of the pre-war streamline steam service, and the 5½ hr. of the "Côte d'Azur Pullman." Despite the widespread reconstruction that has been necessary, these long-distance French timings to-day are faster than the great majority of schedules of corresponding length in Great Britain to-day, except on certain L.N.E.R. and G.W.R. services, and the energy behind this French recovery has been praiseworthy indeed.

#### A Replacement Policy that Pays

A certain amount of scepticism is being shown in some American railway circles concerning the remarkable operating cost and performance figures that are quoted freely in connection with modern diesel-electric power. For years past, under the direction of the Interstate Commerce Commission, elaborate locomotive performance figures of all railways have been published, and the diesel statistics are not altogether complimentary to them. It is well known that the diesels now used for long-distance passenger and freight services run from 600,000 to over 1,000,000 miles between heavy repairs, but it is questioned whether due allowance is made for the extent to which replacements are made in the course of ordinary ser-

vicing, such as of complete power bogies, engines, generators, traction motors and individual engine and electrical parts. Yet, as is pointed out in the *Railway Mechanical Engineer*, it is difficult to find fault with this policy. Any locomotive is of earning value to its owners only when it is in use. To the operating authorities whether there is anything left of the original engine at the end of 1,000,000 miles matters little if the systematic parts replacement policy has given them a power unit which has been available for service for from 90 to 95 per cent. of its time.

#### U.S.A. Travel Controls Going

Rapid progress is being made in the United States with the liquidation of the Office of Defense Transportation, which has exercised control over all U.S.A. transport during the war years. The central office at Washington remains, as there is much work still to be done in connection with the return home of the American forces overseas, which is expected to reach its peak about the end of the year. For some four months it is probable that the railways will be called on to move about a million men monthly, in organised groups, apart from large movements of individuals on leave. Nevertheless, the "field" or district offices of the O.D.T. at New York, Cleveland, Chicago, Kansas City, Denver, San Francisco, and Portland (Oregon) were closed down on September 20 last. There is also a speedy lifting of various controls on travel. From October 1, for example, the ban on civilian group travel has been removed, and from the same date it became permissible once again to organise conventions and similar gatherings, which had been banned since February 1 on the request of the Office of War Mobilization. However, the warning is given by the O.D.T. that train accommodation in connection with such functions cannot as yet be guaranteed, and it is recommended that the attendance be kept to the smallest limits reasonably possible.

#### Restoring the Signalling in France

By the time the Germans had been driven out of France enormous damage had been inflicted on the railways and a great task of restoration faced the responsible authorities. Some idea of the work involved in bringing the signalling into use again can be obtained from the article elsewhere in this issue, by our esteemed contributor of pre-war days, Monsieur J. G. Walter. At liberation the railways found they had 547 mechanical and electro-mechanical signal boxes and 112 electric power boxes needing extensive repair or entire renewal; moreover, a large mileage of controlling and communicating circuits and a considerable quantity of lineside equipment had been damaged. In some cases destruction was complete. During the occupation the management had been carrying on, quietly but energetically, the task of standardising the signalling apparatus—rendered necessary in any case by the amalgamation in 1938 of the former separate and well-known railway systems—and had been able to build and test certain new items of equipment, with the result that it has been possible to arrive at a definite programme by which to guide the work of restoring the railways to normal operating conditions. It is of interest to note that the route setting principle has definitely displaced the individual lever power system.

#### New Steam Locomotives in Sweden

The arrival of new steam locomotives on the Swedish State Railways is a somewhat rare event, because of the very extensive electrification of the system, which amounts to 45 per cent. of the total mileage. The policy during the past twenty years has been to transfer displaced steam locomotives from newly electrified sections to other districts where they took the place of older engines due for scrapping. There is of course a limit beyond which such a course cannot be pursued satisfactorily; and the Swedish State Railways have decided that a good case exists for the construction of new steam locomotives. The design is of the 4-8-0 three-cylinder type, somewhat resembling earlier examples in the high-pitched boiler, and the use of bar frames. Three independent sets of Walschaerts valve gear are used; and one of the most interesting of the new features is the adoption of "SKF" roller bearings for all axles. Sweden has an unrivalled reputation in the pioneer development of such bearings, and the measure of success attained with their use in these engines, especially on the coupled axles, will be a matter of the highest interest to locomotive engineers in many countries. A most commodious cab is a notable characteristic of these 4-8-0s, and a flexible connection gives access to the fuel space, so that even in the coldest weather no undue discomfort is suffered by the engine crew.

### Reactions to Nationalisation Proposals

IT seems clear that the present Government intends that ideological considerations should take precedence over practical requirements during the life of the current Parliament. Mr. Herbert Morrison's latest list of industries to be nationalised is intended to put into effect the tenets of his party, irrespective of whether they are justified by promise of resultant greater efficiency or improved production of the industries concerned, or whether priority should be accorded them at a time when a great many feel that the solution of other problems not only are more urgent, but more deeply involve the well-being of the nation.

The announcement in respect of the future of British transport at least had the merit of making clear by authoritative statement in the House of Commons what previously had been known only from statements by members of the Labour Party away from the Government Front Bench. The railways, long-distance road hauliers, canals, docks and harbours, now know beyond doubt the objective of the Government. The means by which it is to be achieved are still conjectural as to detail, but the principle having been established, two points have become clear. One is that in deciding that coal, transport, iron and steel, electricity and gas, should come under the State, the Government has set itself a colossal legislative task, in which the smoothness of the acquisition of the Bank of England will prove no precedent. The second is that by his statement in the House of Commons on November 19, which we recorded in our last week's issue, and by the uncompromising and dictatorial manner of its delivery, Mr. Morrison has rallied a large body of opinion against the proposals for the overall nationalisation of British basic industry.

The Government appears to consider that having been elected with a large majority, it has a mandate from the people to enforce the policy it advocated at the polls, but it is at least open to doubt whether the electorate appreciated the significance of the outcome of their swing to the Left, and more especially the consequences which might flow from it. It is at least probable that more votes were culled by promises, which appear to be in danger of becoming specious, in the matter of the speedy provision of housing for the people than by the cry of nationalisation of basic industries.

At this early juncture in the life of the Government, two matters deserve comment. The first is the unfortunate repercussion which may result abroad from the pursuit of doctrinaire policies at the expense of practical measures of rehabilitation. The second is the effect on the future commercial and industrial life of the country of pre-occupation of this kind by the Government at a time when every energy should be devoted to the revival and expansion of export trade, to which Ministers of the Crown continue to pay lip service. In view of the size of the task which the Government has set itself, it is clear that years must elapse before, if ever, it is fulfilled. During that time, which must cover the most critical that this nation has known, the effect of the Government's policy must be stultifying. Mr. Morrison's suggestion that in the interval before his plans can be carried into effect "all necessary development in the industries concerned must proceed," is a hope that is as vague as it is pious. The needs of the times call for the undivided efforts of British commerce and industry toward their re-establishment and expansion in the national well-being. This will not be achieved while there is pre-occupation with developments of the kind Mr. Morrison has laid down.

### The Peruvian Corporation

A NOTHER record figure of gross receipts for the year ended June 30 last has resulted in the net amount of £339,181 being added to the Revenue Account of the Peruvian Corporation, against £313,168 for the previous year's working. A summary of the results of railway and lake steamer workings is given below:—

	Gross receipts £	Working expenses £	Net receipts £
Central Railway of Peru . . . . .	724,941	577,999	146,942
Southern Railway of Peru . . . . .	601,775	445,797	155,978
Other railways . . . . .	187,029	179,565	7,464
Lake steamers . . . . .	76,628	47,830	28,797
Totals, 1944-45 . . . . .	1,590,373	1,251,191	339,181
" 1943-44 . . . . .	1,365,243	1,052,074	229,458

The gross receipts reflect the continued expansion of Peruvian trade, and the railway operating results are considered to be satisfactory under the unprecedented difficulties for obtaining new material and equipment for the maintenance of the services. The operating ratio was 78.66 per cent.

The increase of £225,129 in gross receipts over last year produced an increase of £26,013, or 11.5 per cent., in net receipts, which, under present conditions, may be considered relatively satisfactory as expenditure on wages and materials continued to rise and the increased consumption of fuel at an enhanced price constituted a heavy expense. There was only a slight improvement in the supply of railway equipment from England. This is reflected in the accumulation of cash resources representing several years of mainly unspent but urgently needed renewals. The Central Railway continued carrying to capacity; the tonnage moved would have been greater had the necessary locomotive power been available. It is estimated that upwards of 30,000 tons will be held up awaiting transport by the end of December. Delivery of new locomotives is expected early in 1946; six are on order for this railway, and when shipped will greatly ease the traffic problems. On the Southern Railway the increase of traffic has been exceptional; the number of passengers carried has more than doubled, and freight has increased by 100,000 tons. This very rapid expansion of traffic has been embarrassing and the over-working of existing equipment has again proved expensive.

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### Future of the British Machine Tool Industry

THE Machine Tool Trades Association has presented a report on the future of the British machine tool industry to the Director-General of Machine Tools, for transmission to the Minister of Supply. It points out that the industry has been built up over many generations by the inventive genius and enterprise of those engaged in it, and the constant expansion of British manufacturing output has given continuous impetus to the exercise of these qualities on the part of machine tool producers. This impetus has drawn added force from the fact that machine tool manufacture is highly competitive. After pointing out that the Machine Tool Trades Association is convinced that nothing should be done which would tend to impede this natural progress or to encourage a tendency to rely on external guidance and instruction, the Association goes on to explain that it seeks co-operation between the trade and the Government for the well-being of the industry, and its preservation in the vital and healthy state necessary to supply the normal needs of the British industry and of the nation in case of war. It recognises the desirability of the industry having a central channel of communication to Government authorities and also the advantage to be gained from the establishment of a single Government department, through which all problems and questions concerning the industry, could be directed. This view is supported by experience during the war, when, for example, delay and unnecessary correspondence arose from the failure to co-ordinate the requirements of different Government departments in the matter of terms and conditions of contract. The setting up of a Machine Tool Advisory Council within the appropriate Ministry, is also suggested.

One of the most valuable results of the setting up of control during the war was the system of obtaining the vital statistics of the trade, and it is suggested that the machine tool control standard classification of machine tool types should form the basis of all future collection of statistics for machine tools generally. Judged by annual turnover or employment of labour, the British machine tool industry is not large; it comprises something under 150 firms, and in respect of 123 of these their employment structure in 1935 was as follows:—

Establishment— Average No. employed	No. of establishments
11-24 . . . . .	17
25-49 . . . . .	31
50-99 . . . . .	28
100-199 . . . . .	23
200-299 . . . . .	11
300-499 . . . . .	3
500-749 . . . . .	3
750 and over . . . . .	7

The output of the industry in 1938 was approximately £14 millions, and as this includes a considerable amount for re-armament, it suggests that the absorption of machine tools

before the war by British industry was not on a sufficiently high scale. A serious limiting factor on the expansion of the industry was the slow rate of replacement of plant by industrial users and Government factories. In the course of the war it was found necessary to increase the production of the industry to a peak of £46 millions a year, which was reached in 1943. Of this, 25 per cent. came from sub-contracting or sources extraneous to the normal machine tool industry; the established machine tool industry produced £34½ millions a year.

Allowing for a considerably improved mechanisation and replacement by general British industry over its pre-war scale, it is estimated that an output by the British machine tool industry of £23 millions a year at present prices would represent a datum line of production below which it might be dangerous to sink. If and when production comes down to that level, the report suggests that there should be the most careful investigation to ascertain whether a danger point is not being reached. In arriving at the figure of £23 millions, regard has been had to the results of an investigation conducted by the Machine Tool Trades Association into the 1943 position. This showed that machine tool firms could sustain economic and efficient production if their output was not reduced by more than one-third of the 1943 level.

It is suggested that one of the tasks of the Machine Tool Advisory Council would be to seek means of ensuring greater absorption of machine tools by general industry and the faster replacement of existing machine tool plants. It is recommended that it should have regard to the necessity for removing what appears to be the present Inland Revenue conception of a 20-years' life of machine tools, and should examine the possibility of stimulating the demand for machine tools by means of taxation legislation.

The industry has always maintained a high level of exports and has regarded an export market as essential to its well-being. Approximately one-third of British production by value was exported in 1935, and this proportion was maintained approximately until the outbreak of war. The industry recognises the necessity for the maximum export of machine tools. Although not at present convinced of the value to the machine tool industry itself of such aids to export as overseas market research, and although the opinion is expressed in the report that combined selling arrangements must grow naturally within the industry, it is recommended that the Machine Tool Advisory Council should give the closest attention to these subjects so that the industry may not fail to take advantage of whatever means might be devised for improving exports of machine tools.

The Association expresses the view that subject to certain important safeguards, freedom to import machine tools into this country should be restored as soon as possible. The danger is pointed out that an industry like the machine tool industry might become stagnant if too well protected from competition. Before the war foreign machine tools came into this country bearing a duty of 20 per cent.; even that duty could be remitted if it were shown that for the time being the British manufacturer was not in a position to supply. On the other hand, the American duties were so prohibitive that the British machine tool maker could not sell in the United States in any circumstances. The Association urges that British manufacturers should be in a position to sell abroad on the same terms as the foreign manufacturer can sell in this country.

The method of disposal of the comparatively small surplus of machine tools at present in the hands of the Government, has been agreed and is in operation. It is recognised, however, that when very large surpluses come up for disposal, the continuation of the interim scheme might handicap severely the sale of machine tools. It is therefore suggested that when it becomes apparent that the rate of disposal of any particular type of Government surplus is jeopardising the sale of new similar tools, the rate of disposal of the surplus should be subjected to regulation. The policy of refusal to sell used machines for stock should be continued into the main scheme. The vigorous policy of scrapping also should be continued and possibly strengthened. The loss of capital assets to the Government represented by the destruction of machine tools of doubtful value to the industry would be offset by the benefit arising from their disappearance. The whole question of disposal should be regarded as a continuing problem until it no longer exists.

## Locomotives for Colonial Railways

By G. V. O. Bulkeley, C.B.E., M.I.Mech.E.  
Formerly General Manager, Nigerian Railway

A RECENT contributor to *The Railway Gazette* has suggested that there should be created standard locomotives for the Crown Colony railways. This raises the question: "What kind of locomotives?" Characteristics of colonial railways are long gradients and sharp curvatures. In their construction, the principle has been to run round the contours, avoiding tunnels, deep cuttings, and steep embankments.

The weight and ballasting of the track limit maximum speeds and axleloads. I have always felt that chief civil engineers have been unduly cautious in prescribing these. Unnecessarily to limit axleloads and speeds has a permanently crippling effect on line capacity to move traffic. It is encouraging to note that the recent wartime engines constructed for colonial railways in Africa approximate an axleload which has long seemed to me practicable. That is to say,

$$\text{Axe load in tons} = \frac{\text{Weight per yard (lb.)} \times 500}{2,240}$$

Speed of all forms of transport is increasing and colonial railway trains cannot afford to dawdle. If chief civil engineers do not feel able to increase maximum sectional speeds allowed, then there must be provided locomotives of sufficient capacity to sustain throughout the sections average speed which closely approach the maxima allowed. This calls for intensive local investigation and careful designing. If this be not done and locomotive capacity falls below what is necessary, then we come right up against the evil of over-speeding down grades to make up for time lost on the up grades. As the railwayman's doggerel has it:

Up grade crawl and down grade fast,  
Tonnage first and safety last.

Many colonial railways are laid with 80-lb. track up to the inland point of traffic augmentation—or as far inland as funds permit. From this point the aim generally is for the rest of the railway to be laid with 60-lb. rail. Any original 45-lb. sections inland ultimately are re-laid in 60-lb. Assuming this to be a general picture: then a 4-8-4 × 4-8-4 Garratt having a 60-lb. axle loading and a starting tractive force of about 50,000 lb. could deal economically with the heavy seasonal trains of exports and return with imports and empties. These engines would be shopped during the off-season. A "general purposes" Garratt, having 6- or 8-coupled wheels, a 60-lb. axle-loading and a starting T.F. of about 36,000 lb. could handle through passenger trains having dining and sleeping accommodation, also hauling freight trains in the off season. For suburban and short distance passenger and pick-up trains, a 4-6-4 tank engine probably would be adequate. This would reduce engine classes to three.

A point which arises here is that it is not economical to overload a Garratt, any more than it would be to do so under double-heading, although the articulated engine has a cost advantage over double-heading in respect of engine crews, boiler maintenance, and tender haulage, and also is much less damaging to sharply curved track.

Where the 80-lb. section is sufficiently long, or the whole line is moderately graded and a 60-lb. axle-loading under non-articulation will suffice for the loads to be hauled, a non-articulated 4-8-4 engine may prove adequate and economical to operate. In this connection, it will be remembered that at the Southern African Transport Conference held a few years back, it was stated that the maintenance of a Garratt locomotive was about 20 per cent. higher than that of a non-articulated engine of similar power.

The issue is one for individual colonial railways to decide after careful investigation of their own particular conditions and ascertained costs. It is suggested that such costs be worked out on the potential-horse-power-mile unit. Potential-horse-power is the maximum evaporation capacity per hour of the boiler, with the fuel used, divided by the maximum demand of the cylinders for steam per i.h.p. hour. Both of these figures are known quantities for any locomotive. The unit is obtained by multiplying the potential horse-power of any engine by its last year's mileage and dividing by 10,000.

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That is to say, 10,000 p.h.p. miles. (A smaller division than 10,000 can be used if it produces a more convenient unit.) Cost figures under this unit are relative to the actual power which a locomotive can produce in service. The tractive force formula is useless for this purpose, as it gives only starting power, irrespective of boiler capacity.

Initiated by the late Sir Christian Felling, who scrapped outright an obsolete class of engine (a policy which has much to recommend it), the Kenya & Uganda Railways has gone to what is probably the limit in reducing engine classes; it has 60-lb. track Garratts of 50,000 lb. and 40,000 lb. t.f.; a non-articulated 2-8-2 of 40,000 lb. for 80-lb. track and a 60-lb. 4-8-0 of 23,000 lb. It seems probable that on this particular railway the 2-8-2 engine will not be perpetuated.

Coming to details of design and equipment, it is appreciated today that simplicity of design and robustness of manufacture do not preclude advanced features. The period is long past when, under a specious "simplicity," engines for colonial railways were fearfully and wonderfully made; or that, because a black man was to drive them, they must on no account carry a pressure in excess of what gentry in top hats handled in the days of Gooch and Ramsbottom. The suggestions which follow are in no way intended to be dogmatic, but perhaps may evoke interesting discussion, the net result of which will prove useful. Today, native drivers handle their trains admirably. Also colonial running shed organisations are well equipped to service the increasing modern engines which have been coming along during the last twenty years.

The text on which a modern specification for colonial railway motive power must be based is to secure maximum horsepower per cylinder and the suggestions which follow are advanced with this governing object in view. In the *Railway Age* for May 24, 1941, a writer pointed out that locomotive boiler performance had outstripped cylinder performance. He said: "Recent boiler performances have indicated clearly that the latent capacity which for many years has been built into locomotive boilers has remained locked-up within them." Taking the principal parts of a locomotive seriatim:—

#### **Wheels and Axles**

A bogie is desirable. The sharp curvatures to be traversed and their frequency do not favour a pony truck which throws wear on to the tyres of the leading coupled wheels. Bogie axles and those of carrying wheels can be fitted advantageously with roller bearings. These give no trouble and also simplify lubrication. (On the Nigerian Railway we found that fitting roller bearings to a carrying axle cured a previous long-standing trouble. We also tried Isothermos axle-boxes which are excellent for tender and vehicle axles.)

The high revolutions of very small driving wheels knock the motion about, causing heavy wear. With new tyres 48 in. should be the very least diameter used and every effort made to use a larger one. (On the Nigerian and Gold Coast Railways a very successful class of 4-6-2 passenger engine is used to haul through passenger trains heavily loaded. These engines have 60-in. wheels. The Kenya & Uganda Railways has abandoned the very small wheels of its earlier engines in its new power. The Rhodesian Railways' new 6-coupled Garratts have 57-in. wheels, and a starting t.f. of 40,000 lb.)

#### **Boiler**

It is safe to say that every engine should be fitted with the highest capacity boiler that the load gauge and axle loading permit. To secure a maximum use of radiant heat, boilers should have large firebox volume with a combustion chamber extension thereof. Fire-grates should be of ample area and suited to the fuel actually to be used. It is good practice to send samples of the local coal to the Fuel Research Depot in London for test and recommendations as to firebox design. (We did this for the Nigerian Railway—which uses Nigerian coal—before acquiring a new class of locomotive, with the result that firebar spacing was reduced and tubes introduced to supply extra air above the fire. Improved combustion with corresponding smoke reduction accrued.)

Any feature which will assist a boiler rapidly to generate steam under maximum demand should be given consideration. Although some native firemen are real artists at their job, some are not and the sense of rhythm so attractive to the native mind finds its expression in an empirical rhythm of firing. Something like this: 6-shovelsful—injector on—injector

off—6-shovelsful, and so on, irrespective of demand for steam; the steam pressure gauge apparently is regarded as just another of the white man's foibles. Although this gets the trains along, it does not ensure sustained working pressure in the boiler and cylinder horsepower is not maintained.

Firebox syphons involve expert boiler maker's work, but tubes are easily expanded and readily kept clean. Longitudinal water-tubes carrying the brick arch are already in use on colonial railway locomotives and give no trouble. They should, it is suggested, be made a standard fitting. Consideration might also be given to fitting a row of J water-tubes along each side of the firebox—similar to those in Merryweather's vertical boilers which are very rapid steam raisers.

(It is of interest to note that the new turbine locomotive on the Pennsylvania Railroad has a row of inverted T water-tubes depending from the centre line of the firebox crown sheet and then extending across the sides. J tubes would avoid the central weld.)

A useful working pressure would be 220 lb., from both temperature and pressure-drop viewpoints. Superheating goes without saying. A steam-chest pressure gauge is a useful indication to drivers. Steam flow areas should be charted during design and care taken that these are free throughout. A soot blower should be fitted having some device which will bring it into action intermittently (similarly to an automatic blow-down valve).

#### **Cylinders, Motion, and Balancing**

It is recommended that cylinder stroke should not be less than 26 in. and more where the diameter of driving wheels allows. The leverage afforded by a long stroke costs little and increases tractive effort, and a long stroke also allows full use to be made of steam expansion. By the use of alloy steels and careful designing, the weight of reciprocating parts can be reduced to the minimum allowable. Dust is a real enemy to unenclosed mechanism in the tropics and a thin plate worked in between the slide bars and the wheels will prevent dust and grit being thrown on the bars. Side-rod knuckle pins are often a troublesome fitting and the double-taper seems to stand up best. The wear of horn and axle-box faces is a constant problem where clouds of dust and grit accompany the trains during a good part of the year. It does not seem that any lubrication devices are much alleviation. A solution has been achieved by welding thin plates of manganese steel to both axle-box and horn faces.

The high rotational speeds of small driving wheels, combined with mileage of relatively light track and corresponding bridges found on colonial railways, call for a minimum of over-balance. (On the Nigerian Railway we had to strengthen, under one programme, some 200 bridges to avoid damage by existing engines.) With today's heavy engines, it is desirable to allow the mass of the engine to absorb part of the reciprocating surge, leaving unbalanced a greater proportion of reciprocating weight to total engine weight than was former practice. No definite ratio has yet emerged, but 1:300 is an average. Smooth running is also assisted greatly by cross-balancing the main driving wheels. Disc wheel centres, although unsightly, offer advantages in this connection. If I remember rightly, the bridge-impact formula allows some relaxation in the proportion that over-balance is lessened.

#### **Steam Distribution**

The speeds which locomotives are expected to sustain under full loading (a) on up grades, and (b) on the level, should be worked out very carefully in relation to desired traffic density and elapsed times between forwarding and destination points, and advised to the manufacturers of any new class of engine. In considering steam distribution, it has to be borne in mind that although engine speeds are slow to moderate on colonial railways, the relatively small driving wheels used cause piston speed to be fairly high in relation to engine speed. For example, an engine with 48 in. wheels and a piston stroke of 26 in. will have the same piston speed at 30 m.p.h. as one having 80 in. wheels and the same stroke at 50 m.p.h. Piston speed and normal cut-off, therefore, has to be considered in designing valve gear for a colonial railway locomotive. Again, the lead and lap suitable for an express engine may affect starting adversely and slow heavy drags where these are important haulage features.

In general, the choice lies between the ordinary piston valve and the poppet valve. The piston valve is a kind of mechanical Siamese twin: anything done to the intake affects the exhaust and anything done to the exhaust affects the intake. It is remarkable that results are as good as they are with the two separate functions so tied together. Generally, a long travel gives the best results with a piston valve. This being done, the best is hoped for. The question, however, is whether the full capacity of the boiler can be used by the cylinders? For, having provided a high-capacity boiler, the hauling performance of an engine is in the hands of the man who designs the valve gear. It is good practice to lay out valve motion full size in the drawing office, or to make a working model, and to follow the steam distribution for each tenth of piston stroke.

Published data as to the performance of poppet valves are meagre in Great Britain, where their use has never become extended—possibly for reasons which could be eliminated by research. Their attraction relative to cylinder horse-power performance lies in the separation of intake and exhaust.

At a meeting of the Canadian Railway Club on February 9, 1942, a paper, read by Mr. J. E. Long, gave some enlightening figures regarding one system—the Franklin—of poppet valve gear designed to meet the particular requirements of locomotive operation. In this informative paper, the following figures were given for comparative valves:—

MAXIMUM PORT AREAS IN SQ. IN.					
	Intake		Exhaust		
Cut-off Per cent.	12-in. piston valve	Poppet valves	12-in. piston valve	Poppet valves	
25	... 11.56	26.78	64.25	76.78	
35	... 15.69	37.7	66.3	76.78	
50	... 24.53	55.86	66.3	76.68	
	Release, per cent.		Compression, per cent.		
Cut-off Per cent.	12-in. piston valve	Poppet valves	12-in. piston valve	Poppet valves	
25	... 65.6	89.4	26.4	16.1	
35	... 72.2	91.0	20.9	13.8	
50	... 80.2	92.9	14.4	10.9	

These are remarkable figures and it seems clear that a realisation of such valve performance will augment cylinder horse-power relative to available boiler steam. (That the Pennsylvania Railroad is using poppet valves on its latest locomotives—after severe testing in service and at its locomotive testing plant at Altoona—is a reliable indication that this type of valve gear increases cylinder horse-power and that it can be designed and made to stand up to tough operating conditions of railway haulage.)

Given a robust, directly-operated poppet valve gear working in an enclosed oil bath, requiring negligible power to work and showing not more than a few 10/1,000 in. wear per 100,000 miles, its use to increase cylinder horse-power relative to boiler capacity will be attractive to colonial railway managements. It is said that with horizontal poppet valves there is less clearance than with vertical ones and that steam flow can be made smoother; also that where poppet valve diameter exceeds 7 in. for intake and 8 in. for exhaust, multiple valves are indicated. For colonial railway locomotives, these dimensions would appear to be maxima.

Returning to the ordinary piston valve, it has been found that to ensure that a locomotive will always start a train, the maximum cut-off should be 88 per cent., and that, to obtain this, lap plus lead must not exceed 19 per cent. of the valve travel. Also that to ensure a volume steam flow into the cylinder, port opening should approximate 1/40th of piston area at 25 per cent. cut-off. With a 12 in. valve having a travel of 6 in. and a 20 in. cylinder, all these requirements will be satisfied with a 6 in. lead and not more than 1 in. lap, which seem about right for a freight engine.

#### Alternative Designs

In seeking a fixed exhaust, the Uniflow principle at once comes to mind and has the merit of extreme simplicity. Unfortunately, little data have been published regarding the locomotive experiments already made in Russia, Great Britain, the U.S.A., and Germany. It is well known that stationary Uniflow engines, having a vacuum at the exhaust ports, are very successful and very economical. On a locomotive there can be no condensing apparatus with the result that compression is long with the Uniflow principle. To add an

auxiliary exhaust valve converts the system to duo-flow and offers no advantages over ordinary piston-valve distribution. Nevertheless, the idea of applying the Uniflow principle to locomotives is not dead, and in the opinion of a leading authority (Mr. Lipsetz, Consulting Engineer to the American Locomotive Company) it offers attractions for further research.

A three-cylinder compound locomotive on the Smith system, having the h.p. cylinder between the frames and two l.p. cylinders outside them, might adopt the Uniflow principle for the h.p. cylinder. Incidentally, the Smith three-cylinder system offers some advantages for the long drags between stations on the larger colonial railways. (Had it not been for the financial slump of 1930-35, the C.M.E. and I had agreed that one might well be tried on the Nigerian Railway.) Fitted with the "Midland" regulator, there seems no reason why this economical design of engine should not give good colonial service. In his Presidential Address to the Institution of Mechanical Engineers, Sir William Stanier said that the Smith compounds on the L.M.S.R. were still doing good work but had not been modernised.

Geared locomotives have been put forward as a solution to colonial motive power and there are some small ones working on the Egyptian Railways. The idea of one design of engine for all services, differing only in the gear-box ratio is attractive, but probably too good to be fully practicable. Research is needed here, too.

For shunting and seaport work, the diesel engine is supreme because of its high availability, full horsepower at low speeds, non-standby losses, lack of fire risk, and ease of operation.

#### Miscellaneous

It should now be standard practice to fit a speedometer to every colonial railway engine. Without this, native drivers cannot be expected to observe the many speed restrictions found on these railways. The electric type now available has solved maintenance difficulties. Although most colonial railways lie in the tropics and feed-water heaters are not necessary, exhaust steam injectors might well be fitted. Staff could readily be trained to look after them. Locomotive cabs should be made as cool as possible. For example, the sight-feed lubricator should not be placed right in front of the driver's face. On articulated engines, the steam pipe should not be carried under the cab floor. A two-way ventilator in the cab roof is a help.

I have found it essential to appoint a Research Assistant to the C.M.E. Unless it be one man's job to test and follow up locomotive performance, no one will do it and efficiency falls off. The Research Officer should be well equipped with necessary instruments for locomotive testing. A colonial railway cannot afford a fully-equipped dynamometer car, but I have always felt that a vehicle could be locally fitted up with a simple (purchased) dynamometer unit, probably of the calibrated-spring type, and the actual performance of the engines ascertained. There must be many colonial locomotives running at less than their potential power and economy.

Many of the foregoing suggestions are already incorporated in engines delivered to colonial railways. The point which I wish to make is that under colonial railway financial arrangements it is very difficult to retire a locomotive class before its amortisation date arrives. Though their purchase price may seem high at the time, everything is in favour of acquiring engines of advanced design and equipment, whose capacity for delivering maximum power at the drawbar will not deteriorate seriously with the years. Thus can be secured the greatest possible return on the money invested, by moving—with the expedition that local conditions demand—a maximum annual tonnage per economical unit of motive power.

As to locomotive standardisation, a survey should be made. There are variations in gauges, ruling grades, yard and running shed accommodation. With the exception of gauge, such differences could be composed. A carefully formulated questionnaire issued by the Colonial Office would elicit sufficient information to indicate whether the proposal merited complete investigation. If found practicable, substantial advantages would accrue in first cost and repair parts; also in running service simplification. Under the regional grouping of Crown Colonies which looms ahead, the manufacture of spare parts could be economically spread over the workshops of the several railways in a region.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### "What is Nationalisation?"

London Passenger Transport Board,  
55, Broadway, Westminster,  
London, S.W.1. November 19

TO THE EDITOR OF THE RAILWAY GAZETTE  
SIR.—In the article "What is Nationalisation?" in your issue of November 16, the statement is made that our "board of directors is nominated by the Government." This is not so: the London Passenger Transport Act describes the board as a "public authority" consisting of a Chairman, and six other members, from time to time appointed by a body known as the Appointing Trustees. The Appointing Trustees are as follow:—

- (1) The Chairman of the London County Council.
- (2) A representative of the London & Home Counties Traffic Advisory Committee.
- (3) The Chairman of the Committee of London Clearing Bankers.
- (4) The President of the Law Society.
- (5) The President of the Institute of Chartered Accountants in England and Wales.
- (6) The Chairman of the Board or some other member of the Board nominated by the Board.

Yours sincerely,  
W. W. HOWELLS  
for Public Relations Officer

[The Appointing Trustees were brought into being by Parliament under the London Passenger Transport Act. It would require an Act of Parliament to vary them. Neither the London Passenger Transport Board, as such, nor the stockholder, has any voice in the selection of members of the Board. In effect do not the Appointing Trustees act as the agents of Parliament?—ED. R.G.]

### Compartment or Open Stock for Suburban Services

74, Claverdale Road,  
Tulse Hill, S.W.2. October 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—Quite frankly I was surprised to read the statements made by "H. A. C." in his letter printed in *The Railway Gazette* of October 26 on the subject of open cars *versus* compartment coaches for London suburban services.

May I be allowed to refer him to the table contained in my letter which you were good enough to print in *The Railway Gazette* of April 13 last? This table indicates that if open cars of the London Transport type were used on lines where compartment electric stock is the rule the bulk of the passengers would have to stand.

Compartment stock for London electric suburban work is not by any means dead. It was not in that condition even in the middle nineteen-twenties when the L.M.S.R. and the Metropolitan Railway both reverted to compartment stock after using open cars for a considerable time. At the present time it is still very much alive, as shown by the fact that in spite of war and post-war difficulties the Southern Railway has managed to turn out a number of the four coach six-a-side sets of the "4101" class, as well as a number of loose vehicles of the same type to bring the three-coach sets of the "1285" and "1496" classes up to four coaches each. As I pointed out in my letter above referred to, a Southern four-coach set of the "4101" class provides 468 seats in an overall length of 257 ft., and an equivalent train of London Transport open cars provides only 210. The balance of 258 passengers, assuming a full load, would have to stand, so that each open car would carry 42 passengers seated and 51 standing. I wonder how "H. A. C." would like to be one of 51 standing passengers in an open car?

It is becoming almost a tradition that the daily passenger by a London suburban train has to stand in discomfort twice a day. But what are the facts? It is not perhaps realised that if a standard Southern eight-coach train has an average of five standing passengers in each compartment that even then two-thirds of the passengers still have seats. There has always been "overcrowding" on suburban lines and perhaps always will be. Sir William Acworth's book "The Railways of England" (1890) records that about 1885 the Board of Trade made some enquiries regarding workmen's trains. The question of overcrowded trains not unnaturally arose and the Board's Inspector, Major Marindin, who made the inquiry, summed up as follows:—

"Whatever may be done, I do not think that overcrowding can be altogether avoided. Wet weather, the unpunctuality of

even one train, the unwillingness of passengers to wait, if only for five minutes, the fact that a large proportion of workmen commence work at about the same hour, and the curious anxiety to get into the front carriages, or into those nearest to the exits, which is observed on nearly all the lines, are causes of overcrowding, which the companies could never entirely overcome, without resorting to steps which would cause great discontent, and still greater inconvenience."

Major Marindin's summing up generally holds good to-day. It was only a few mornings ago that the train in which I was riding caught up a very well-loaded suburban train on its way to London Bridge. The second compartment of the front coach had every seat occupied and five people standing; the last compartment but one contained but four people in all. Whether this situation ever can be altered is a moot point; whether any kind of overcrowding will be solved by the use of open cars in place of compartments is not so uncertain. For many years there have been loud complaints about the congestion on the Tubes and District lines; a friend of mine says it is now some years since he had a seat on his daily journey from North-West London to the City by tube. I have had to stand on the District Railway during the slack hours.

Your other correspondent, Mr. C. F. King, rightly draws attention to some of the disadvantages of open cars of the London Transport type, and particularly that there is no rack or other place where a large parcel or a suitcase can be placed. He also mentions the *meleé* that takes place when one of these well-loaded trains stops at a station. The wide open spaces round the doors were, I believe, intended as a kind of concourse for passengers about to alight, but as a rule they are used as standing accommodation, with the result that to leave the car usually means pushing through a number of people, some of them not infrequently having luggage with them.

Mr. King says that he would be interested to hear other people's views on the question. I have been a season-ticket holder for nearly twenty-five years, first on the L.B.S.C.R., and since the grouping on the Southern Railway, and I think all the Southern lines which ran electric trains are to be congratulated on not succumbing to the craze there was some years ago for using open cars for suburban services, whether they were suitable for the job or not. I use the line during the peak periods, but I cannot say that given normal conditions I ever have an uncomfortable ride. But I should be very sorry indeed to see the existing compartment stock give place to the open car—my comfortable ride would undoubtedly be replaced by a nice comfortable "standing seat" as I once heard someone say.

Yours faithfully,

G. T. MOODY

### L.N.E.R. Locomotive Rebuilding

23B, Golders Way,  
London, N.W.11. November 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I have read with interest Mr. Arthur F. Cook's defence of modern locomotive tendencies on the L.N.E.R., but his arguments are not convincing. He states that he has found "the opinion unanimous" amongst members of the L.N.E.R. running departments, who have had experience of the several types of two-cylinder locomotive which Mr. Thompson has designed or rebuilt, that the maintenance is much easier (therefore cheaper) than that of the corresponding three-cylinder machines. What are these "several types"?—one "D49," the details of which have never been published, one "K3," and now one "Sandringham." The last two have been in service for so very short a time, that it is far too early for such sweeping judgments to be made.

It is to be inferred that Mr. Cook also intended comparison to be made between Mr. Thompson's 2-cylinder "B1" class and the late Sir Nigel Gresley's 3-cylinder "B17." However, can we compare a wartime utility engine of mixed-traffic category with a high-speed express passenger design even though both use the same boiler? It would be interesting to see how a "B1" would perform on trains like the 2.32 a.m. newspaper express from Marylebone to Leicester which involved running speeds up to 90 m.p.h., or again the pre-war 6.20 p.m. from Marylebone with loads up to 400 tons. Recent reports suggest that the "B1s" and the recently rebuilt "Sandringham," now with 2-cylinders only, perform best when working at more than 25 per cent. cut off; this means that for fast running the regulator would need to be partly closed and the advantage of high-pressure steam lost by throttling. On the other hand the Gresley "B17s," like all Sir Nigel Gresley's 3-cylinder designs, run sweetly on 15 per cent. with the expansive properties of the steam used to the full.

A 2-cylinder engine, even with only 30 per cent. of its reciprocating parts balanced, may ride well when brand new, but it is certain it will be a good deal rougher than it used to be when it is run down and will tend to give passengers, not

November 30, 1945

to mention the engine crew, an unpleasant surging sensation; also it will be more prone to slipping.

I agree with Mr. Cook that some comparisons published in the past between 2- and 3-cylinder designs are of little value nowadays, but the theoretical advantages of 3-cylinder propulsion over 2-cylinder are unquestionable.

Although during the war there was every justification for building a utility 4-6-0 of the simplest possible design, using existing patterns and tools, as also for its multiplication for general mixed-traffic duties, the tendency to scrap engines of proved efficiency now is less understandable.

These so-called rebuilds are evidently little less than brand new engines. When motive power is in such demand, why scrap useful and powerful locomotives when, by the provision of a new set of wheel centres, boiler mountings and presumably cab fittings, one could have an additional engine and still be in a position to make comparisons between 2- and 3-cylinder propulsion. Much the same remarks apply to the recent rebuilding of the Gresley Pacific engine No. 4470, *Great Northern*, to say nothing of the "K4" engine No. 3445, the latest specimen to be selected. As to the conjugate valve gear I would say that before the war, the L.N.E.R. had a reputation second to none in the world for high speed and efficient running and that many of the locomotives so engaged were 15 years old or more.

Which is better—to have an engine of moderate performance which is a psychological tonic to shed fitters, or a first class locomotive which only needs proper maintenance?

Yours faithfully,  
W. J. REYNOLDS

### N. or M.

9, Kebble House, Manor Fields,  
Putney, S.W.15. October 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Concerning the desirability of naming locomotives at all, I would prefer to remain benevolently neutral, but, if this cult is to be perpetuated, may I ask that the selected titles be of such a nature that the man in the street—or, more appropriately, the man on the platform—can get his tongue round them?

Place-names and proper-names, be they classical, mediaeval or modern, are notorious pitfalls for the unwary, brilliantly exemplified by the late Prof. Leacock's impecunious "aristo," whose demesne was spelt "Notacentinem Towers," but pronounced "Noshem Tors."

No one wants to quarrel with the Irish if they insist on calling the latest product of Inchicore *Fionn Ma Cumhal*, but what is

meat for the Celt and Gael is assuredly poison for many a Sassenach, revolted as he is at the sight of a name-plate starting off with "Llan" and ending up with some unpronounceable gibberish.

I am not suggesting that we should go to the bottom of the scale and dub our streamline monsters *Fido* and *Spot*, *Mutt* and *Jeff*, or even *Pip*, *Squeak*, and *Wilfred*, but surely there must be a middle course between the pretentiously pompous and the ludicrously infantile.

If the present method persists, we are only risking a repetition of that admittedly humorous but rather pathetic incident in which a carriage-examiner, standing on Crewe Station as an up L.N.W.R. express pulled out in charge of the two "Precedent" class locomotives *Cerberus* and *Psyche*, remarked to his mate: "Blimey, Bill, she ought to do all right with old *Cerebos* and *Physic*."

Yours faithfully,

J. E. L. SKELTON

### A Tribute to the Southern Railway

General Manager's Office, Waterloo Station,  
S.E.1. November 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am enclosing herewith copy of letter received from Mr. K. Jennings, who has recently returned to this country from Burma.

I send you this bearing in mind Miss Kingdom-Ward's letter to the G.W.R., which appeared in your last issue, and which I found most interesting.

Yours sincerely,  
C. GRASEMANN,  
Public Relations & Advertising Officer

[Copy]

129, Underhill Road,  
S.E.22. November 14

SIR,—I have been back three weeks from Burma and have been travelling a good bit since I arrived.

I feel I must write to congratulate the Southern on its recovery from war conditions at this early stage. The lighting, comfort, and particularly cleanliness of the trains and stations strike me as remarkable in view of the damage the S.R. has suffered and the staff, who have the best excuse of anyone for showing "war nerves," are as courteous as ever.

Well done the Southern.

Yours faithfully,  
K. JENNINGS

### Publications Received

**Origen de los Ferrocarriles Españoles (Comienzo de su Historia)**: (The Beginnings of Railways in Spain). By Francisco Wais, Deputy General Manager of the Spanish National Railway System, Madrid: Sociedad General Española de Librería, Evaristo S. Miguel 9. 280 pp., 5½ in. x 7½ in., with illustrations.—The development of the Spanish railway system may be considered to occupy two periods, the first from 1829 to 1855, covering the initial efforts to secure support for the new method of transport and marked by many attempts and failures, the second from 1855 until the completion of the principal main routes in the country and the lines linking the capital with the neighbouring lands of France and Portugal. Although some far-sighted men in Spain had recognised the possibilities opened out in 1825 by the Stockton & Darlington line in England, and later and more particularly by the Liverpool & Manchester Railway in 1830, the political and economic situation was such that several years elapsed before anything practical was accomplished and public authorities were brought to realise the need of framing a considered policy in the matter. A Royal Order dealing with the question of railway concessions appeared in 1844 and in the following year George Stephenson visited Spain, proceeding as far as Madrid, to advise on a projected northern main line. Nothing resulted from his visit, but various

concessions were granted between 1844 and 1846, chiefly to foreigners, for lengths of route scattered about the country. Most of these came to nothing and the concessions lapsed. In this Order the gauge of 5 ft. 6 in. was officially laid down, on the recommendation of some engineers who considered that it offered a better chance of building efficient engines and rolling stock. This book confirms once again that strategic reasons were never in question in taking this decision. Not until 1848 was the first line opened in Spain, between Barcelona and Mataró. This was followed by the Madrid and Aranjuez line in 1851, and the Langreo line, in Asturias, in 1855. (The last named, curiously enough, was built to a gauge approximating to Stephenson's.)

Señor Wais, finding that the story of these early years, up to 1855, has not been set out as a connected whole in a work generally accessible, has brought all the facts together in the volume under review, which bears the imprint of careful research and gives all the essential details relating to the forming of the early undertakings, their struggles, successes, and failures, and the persons involved, together with the development of Government control and the action of the various ministries in shaping national policy in railway affairs. The book is not intended to be technical, but it gives enough particulars of the track, rolling stock, etc. of the lines dealt with to enable a good general picture of them to be obtained. English ideas naturally

exercised considerable influence for a long time and the chaired form of permanent way was at first adopted. The legal side of the question is excellently set forth. Señor Wais has fully accomplished the object he set before himself in this clearly-written contribution to an important part of European railway history.

**Gang Trolleys**.—Bulletin 451, issued by D. Wickham & Co. Ltd., Ware, contains illustrations and details of various types of gang trolleys and trailers for economical and emergency purposes in permanent way maintenance. The vehicles are fitted with water-cooled engines. The trolleys are of various man- and material-carrying capacities up to 38 men and 2 tons of ballast. An interesting item is a rail-carrying bogie which can be used in pairs with rails slung under, for attachment to the gang trolley.

**The United Steel Companies Limited: A-Z List of Products**.—We have received from the United Steel Companies Limited, a copy of the "A-Z List of Products" issued by the organisation to cover the needs of the transition period that must elapse before it becomes possible to publish revised technical literature and catalogues. The list includes the full resources of the company, which meet the requirements of practically every trade using iron, steel, coal, coke, coal derivatives, ferrous alloys, bricks and pre-cast concrete products. The list is obtainable from any of the company's offices.

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## The Scrap Heap

### "Stationmaster General"?

Mr. Herbert Morrison (Lord President of the Council) in a written reply to a Question in Parliament as to whether, in view of the fact that the war had terminated it was his intention to continue the name of the Ministry of War Transport, stated: "No; and the necessary legislation will be introduced as soon as possible." It is rumoured that the designation now favoured for the Minister's new title is "Stationmaster General" in order to synchronise with "Postmaster General" and also delicately to foreshadow a coming event.

### 100 YEARS AGO

From THE RAILWAY TIMES, Nov. 29, 1845

**EASTERN COUNTIES RAILWAY—CAMBRIDGE AND COLCHESTER LINES.**—The Directors of the Eastern Counties Railway Company have to announce that, with a view to promoting the convenience of residents upon the lines, they have determined upon issuing tickets, on and after the 1st of December next, at the following rates:

	YEARLY TICKETS.	HALF-YEARLY.	
	First Class.	Second Class.	First Class.
	First Class.	Second Class.	First Class.
London and Mill End			
" Stratford			
" Lea Bridge			
" Tottenham	£15	£10 ..	£10
" Marsh-lane			
" Edmonton			
" Ilford			
" Fonders End	20	15 ..	13 10
" Waltham	25	18 ..	16 12
" Romford			
" Duxford	30	20 ..	20 13
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" Ware	35	25 ..	24 16
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" Roydon			
" Burn Mill			
" Harlow			
" Sawbridgeworth	45	33 ..	30 24
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" Ivinghoe			
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" Elsenham			
" Newport			
" Wenden			
" Chesterford			
" Whittlesford			
" Shelford	63	45 ..	42 30
" Cambridge			
" Hatfield			
" Witham			
" Kelvedon			
" Mark's Tey			
" Colchester			

Tickets to be obtained on application at the Company's Office, Shoreditch Station.

Office, Shoreditch Station, November 22, 1845.

### "Woe, Woe!"

London yesterday (November 21) was a defeated, miserable city. Her conquerors, who strutted gigantic and formidable through her darkened streets, were General Winter (who is an old campaigner) and General Austerity (who is only War Substantive, but is hanging on tightly to his rank and power).

From two o'clock onwards black night descended on this unfortunate metropolis. It was unrelieved by any pleasant glare from shop windows, because there are sheaves and sheaves of bleak regulations forbidding the poor shopkeeper from exhibiting his wares.

There were no street lamps until the permitted hour, because local authorities are just as subject to the wet blanket of repression which enwraps this land.

There is—believe it or not—a theatrical production at present billed in London called "Merrie England." The difference between ourselves and our ancestors is almost too appalling to contemplate; but there might have been some minutes' healthy fun had Queen Elizabeth ever known a President of the Board of Trade who primly bleated at her, "We must be austere, ma'am. True we beat the Armada, but *that* is no occasion for wasting valuable fuel on bonfires and such."

We too have beaten Armadas, greater and more terrible than any Lord Howard of Effingham ever saw. We have reason enough for lights, decoration, glitter, gaiety, fun . . .

For months since the war ended there has seeped out from Whitehall (where once a very gay King had a very gay Palace) this atmosphere of arid, self-righteous, stodgy gloom. This Government, and the bureaucrats who are its apt, glum mutes, are intolerably grim without being in the least gay.

Can they smile? Or is it frivolous, reactionary and unprogressive?

"*Vae Victis!*" was the ancient, historic cry at the end of a war: 1945 looks like being "Woe, woe!" to the victors. And frankly it is a pity, because the people of England are not like this really. Smug repressiveness is an undesirable alien.—From "The Evening News."

### RAILWAY QUESTIONS AND ANSWERS

**Statement:** Because rail transport is the cornerstone of distribution, it should be nationalised.

**Answer:** Railway charges for the conveyance of foodstuffs are so small that even if all food were carried free, there is no coin small enough to allow retail tradesmen to make a proportionate reduction in their prices to the public. To reduce freight charges would not reduce the cost of food to consumers, but would result in an operating loss which the taxpayer would have to pay. To provide more than the adequate facilities for traders and industry would be unnecessary and uneconomic, for which the taxpayer would again have to pay. There is no evidence that State-ownership could provide better facilities for distribution than is available already under free enterprise.—From "Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.

### U.S. AND U.K. MOTOR-CAR PRICES

British motorcar manufacturers who recently grew restive when Sir Stafford Cripps urged them to concentrate on exports, and told them the home market could not afford new cars, will not have been cheered by the recently announced prices for U.S. cars. Some examples are given below, compared with those of some British cars:—

U.S. cars	Price £	British cars	Price £
Ford V-8 Coupé	209	Humber 27 h.p.	890
Studebaker Coupé	220	Wolseley 18 h.p.	678
Studebaker	3-passenger	Austin 16 h.p.	569

### AMATEURS AT MINISTRY

Now, as throughout the war years, there is a steady flow of ships coming into the Mersey fully loaded, but a good many are leaving the port only partly loaded or even in ballast, pointing to the fact that the country's export trade is slower in developing than had been hoped.

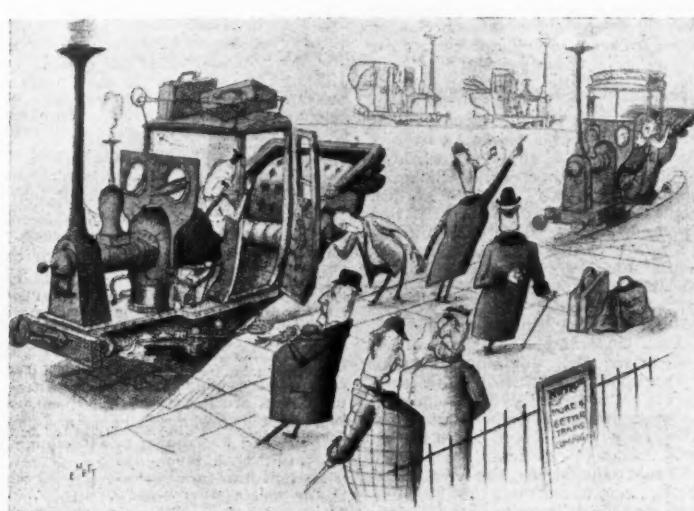
Asked by the *Daily Post* for a comment on this state of affairs, a prominent figure in the city's export trade declared recently that wastage of shipping space was caused by the Ministry of War Transport. "The whole thing is in the hands of amateurs," he said, "and delays and loss of trade are caused which could be avoided if the responsibility for the loading of cargoes were left in the hands of the ship-owners."—From the "Liverpool Daily Post."

### TAILPIECE

(*Mr. Herbert Morrison has revealed the Government's plans to nationalise fuel, power, and inland transport within five years*)

The date of the millennium  
Is absolutely fixed,  
And who will dare to watch it come  
With feelings sad or mixed?  
The date is five short years ahead  
When private ownership is dead.  
O hark to Herbert's call!  
"We're getting near to zero hour  
For inland transport, fuel, power,  
Uncle Tom Cobleigh and all."  
In truth it seems to some of us  
A lot to have on hand.  
And what of social services,  
And what about the land?  
And what about the little flat,  
The homes for heroes and all that?  
But hark to Herbert's call!  
"We're getting near to zero hour  
For inland transport, fuel, power,  
Uncle Tom Cobleigh and all."

E. C.



"Ah, now, THAT'S what I've always said: study the individual"

[Reproduced by permission of the proprietors of "Punch"]

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### SOUTH AFRICA

#### Railway Rates Discussed

Representatives of many commercial, industrial, and other organisations met Mr. F. C. Sturrock, the South African Minister of Transport, to ask for a revision of railway rates. Spokesmen for the Johannesburg Chamber of Commerce pointed out that, compared with the rates in force in 1910, those imposed today were in some cases more than 40 per cent. higher. A Chamber of Mines delegate said that the industry felt that the general level of railway rates was unduly high. An excessive proportion of railway traffic was rated too low and the high-rated traffic carried the burden. Replying to the delegates, Mr. Sturrock said the whole question of railway rates was being investigated and report would be issued soon. He did not think that railway rates had retarded the development of Johannesburg. Other areas would be glad to bear the rates if they could develop similarly. The railways were still operating on pre-war charges, plus 10 per cent. He asked if any of the business men present could claim to be doing likewise.

#### South African-Built Engines

Several of the twelve heavy shunting engines of the "S" type, which are being built in railway workshops in the Union will be in service next year. The decision to undertake construction was made during the war period, when increased traffic led to an acute shortage of engine power. The type of engine to be constructed is a shunting engine complete with tender, similar to the class "S" engine, of which fourteen are in service at present. Larger boilers will be installed in the new engines to permit of an increase in tractive effort, and will also increase the adhesive weight. These boilers, which will incorporate all the latest features of the South African Railways standard boiler design, are similar to those recently fitted to class "12A" engine frames. The engine design generally has been modified to incorporate all the latest developments, and the 0-8-0 wheel arrangement has been adopted. The boiler will operate at working pressure of 180 lb. per sq. in. The cylinders are 21½ in. × 25 in., and the coupled wheels are 4 ft. dia. The tractive effort, at 75 per cent. boiler pressure, is 38,000 lb. The engines have been designed for a maximum axle load of 20 tons and can operate on curves with a minimum radius of 165 ft. The tenders have been designed to carry 6,000 gal. of water and 12 tons of coal. The bunkers have been arranged to permit of the maximum field of view from the driver's seat to the rear.

Because of the inability of the local steel industries to produce the slabs required for the engine bar frames, these, together with certain other components, including tyres, superheater elements, and proprietary fittings, are being imported, but the bulk of the material is being obtained locally, and all the castings, including the coupled wheels, cylinders and frame stays, are being manufactured in the railway workshops. The primary function of the South African Railways & Harbours workshops is to serve as repair depots dealing with a fixed normal output of engines per month. In addition, they are required to erect all new locomotives imported from overseas, and to manufacture material required for new harbour works. In the circumstances, the manufacture of the new

"S-1" locomotives, as they are to be designated, could not be undertaken on a straightforward production basis. This has resulted in the work being held up frequently pending the completion of the more urgent routine jobs. Despite these difficulties, considerable progress has been made in the manufacture of the component parts. The production of castings—always a bottleneck because of the time required for the preparation of the patterns—is well in hand; a number of forgings are being manufactured and the machining of castings and forgings is proceeding. It is hoped to have some of the engines in service next year.

#### Projects for the Orange Free State

Mr. F. C. Sturrock, South African Minister of Transport, stated in Bloemfontein recently that the provision of a new station for Bloemfontein, and the remodelling of the railway yard, form part of the railway programme for the Free State. Estimates were now being prepared and would be submitted to Parliament. The development of the Free State's goldfields in relation to railway services was already receiving attention, and he hoped to be in a position to arrange discussions on the services to be provided in the next few months. At present the railways were working on a programme involving expenditure of more than £2,000,000 on the Free State system. This was only part of the programme for this province, representing work which could be tackled immediately.

#### Double Track

An item of particular importance in the new programme of development, was the doubling of the main line between Bloemfontein and Kroonstad, with an improvement of curves. Certain sections already had been doubled, but the major portion, a distance of 111 miles, was now to be doubled throughout. This work, which would cost £1,550,000, would have an important bearing on operating conditions south of the important junction of Gunhill, where traffic was handled to and from Natal, the Witwatersrand and Rhodesia.

Conditions on the line to Natal also were to be improved as a result of the allocation of £500,000 towards the introduction of deviations between Gunhill and Harrismith. Further relief on this section would be provided through the remodelling of the yard and locomotive depot layout at Bethlehem. This work would cost £80,000. Bloemfontein itself was to have extensive improvements effected at its workshops which were to be expanded on a considerable scale at a cost of nearly £170,000. These extensions comprised the erection of an iron foundry and pattern shop with modern plant, a new carpenter's shop, paint shop, timber seasoning kiln, and new offices for the mechanical and stores departments.

#### Bloemfontein Communications

In the scheme for improving departmental communications Bloemfontein was to be provided with long-distance wireless communication at a cost of £13,000 and was also to be given a new departmental telephone exchange which would cost a further £14,500. Although not directly concerned Bloemfontein should benefit materially from the decision to erect new station buildings and to effect improvements to the yards at Glen and Hamilton, for which work £15,000 and £22,000 respectively had been set aside, as these were works

which should assist in relieving the congestion of traffic at Bloemfontein.

#### Impending Orders

An order is about to be placed in South Africa for the construction of 4,500 heavy coal wagons for the South African Railways. The Minister of Transport, Mr. F. C. Sturrock, made this announcement when he was speaking at the launching at Maydon wharf of the first South African-built pilot tug, *Harry Cheadle*. The Minister added that a larger tug would be built here.

In another address the Minister gave hope of more aeroplanes, better machines, and cheaper fares in the future. He said that he knew the present fares were too high and that he was prepared eventually to put as many machines in the air as he could to cope with the passenger traffic offering.

## VICTORIA

#### Sand-Drift Difficulties

The breaking of the drought throughout the northern half of the State by the rainfall of June and July has relieved railwaymen of much anxiety. A series of years during which the rainfall has been below normal culminated in a particularly long period of meagre rainfall in 1944 and the first half of 1945. Soil drift due to wind erosion extended, and trouble was experienced in parts of the country not previously affected. To indicate the extent to which sand troubles increased, it is pointed out that, in the Bendigo district during the whole of 1938, the delays to trains due to the effects of sand drift amounted to 30 hours for 5 trains, whereas in the six months ended May 1, 1945, in the same district, 86 trains were delayed a total of 135 hours, six trains were cancelled, and five were terminated short of their proper destinations. Sand drift also is responsible for sidings, road approaches, buildings, fences, stock yards and culverts becoming partially buried and the clearing of these is an almost continuous job.

The clearing of railway property has been carried out by hand shovelling, power plants, horse scoops, and other means, but the men and equipment available were not sufficient for requirements. Outside labour is employed wherever available, but the main burden of clearing lines has fallen on the track staff, which has done an excellent job, at all hours of the day and night, frequently under most unpleasant conditions. The gangs in the sand drift areas are equipped with floodlights and portable telephone sets.

#### Wind Chutes

On the worst sections of track wind chutes made of timber frames sheeted with iron are used extensively to keep the drifting sand from covering the rails. These chutes operate as a funnel which carries the sand over the tracks and forms a bank on the other side. Some 13 miles of these wind chutes are in position, and more are in course of erection. Without them certain lines could not be kept open for traffic in bad years. By constant experiment and alteration to suit particular localities, the usefulness of sand chutes has been greatly increased. The longest continuous stretch of chutes is 15 chains, and the highest is 30 ft. above rail level.

Endeavours have been made to control the drifting sand to some extent by planting selected cover crops in conjunction with the land-holders and with other Government departments. Little success has been achieved in this way, but the appointment

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November 30, 1945

## THE RAILWAY GAZETTE

563

of the Soil Conservation Board, to which the Railway Department has offered full co-operation, probably will effect useful results. With proper methods in the planting of drought-resisting crops, controlled fallowing, fencing, and so on, much may be achieved in improving conditions in the areas subject to wind erosion and restoring land to fertility after it has been denuded of its natural cover.

## UNITED STATES

## A Santa Fe C.T.C. Scheme

A contract has been placed by the Atchison, Topeka & Santa Fe Railway System with the Union Switch & Signal Company for materials to instal centralised traffic control over 110 miles of single track between Waynoka, Oklahoma, and Canadian Texas. The control machine is to be located at Amarillo, 100 miles west of Canadian. Installation will be by the railway's signal staff.

## Inductive Train Communication in Colorado

A contract has been placed by the Denver & Rio Grande Western Railroad in connection with plans to introduce inductive train communication over 275 miles of its main line between Denver and Grand Junction, Colorado. From the operating point of view this route is one of the most difficult in the United States, as it passes through Moffat Tunnel, at a maximum altitude of nearly 10,000 ft. above sea level. Sufficient equipment is being obtained to equip 15 quadruple-unit freight locomotives and 15 cabooses for intercommunication between engine and train crews over the entire length of the main line between Denver and Salt Lake City; ten wayside stations also will be equipped to communicate with passing trains, along the 275-mile section mentioned. The system to be used is that of the Aireon Manufacturing Company. The main line concerned already is equipped throughout with centralised traffic control.

## Pennsylvania 1945 Rolling-Stock Programme

Rolling-stock purchases on a considerable scale are being made by two leading American railways. The Pennsylvania Railroad is spending about \$22,670,000 during 1945. Among its purchases are 45 steam passenger locomotives of the new "T1" 4-4-4 type, 20 of which are being built in its own Altoona shops, at a total cost of \$4,780,000, and 25 by outside builders, at \$6,350,000; it is a very unusual event for this company to make an outside purchase of steam locomotives. Also, 45 tenders, each of 18,000-gal. capacity, are being built at a cost of \$1,620,000. Another purchase in 1945 is of twelve diesel-electric shunting locomotives of from 600 to 1,000 b.h.p., at a total cost of \$776,500. The remainder of the prospective purchases during the year comprises 92 passenger chair-cars (\$6,222,974); five each of the following vehicles: baggage-lounge, dining, kitchen-dormitory, and observation-lounge-buffet cars (\$1,635,000); and 300 70-ton bogie hopper wagons (\$1,285,500).

## New York Central Rolling-Stock Programme

The New York Central System, which has been experimenting with two 5,400-b.h.p., triple-unit freight diesel locomotives, is extending the experiment by the purchase, at \$1,038,970, of two triple-unit passenger diesels of 6,000 b.h.p., for its fast and heavy services between New York and Chicago. The success of the latest

express passenger steam locomotives of the 4-8-4 "Niagara" class has been such as to prompt a further order on the American Locomotive Company for 26 of these locomotives, 25 of the existing type, at a cost of \$5,971,350 (\$238,854 each), and one with poppet-valves, costing \$290,000. The last-mentioned doubtless will have the Franklin system of steam distribution, now being applied so successfully to the Pennsylvania 4-4-4 locomotives of the "T1" class. Five Electro-Motive diesel shunters of 1,000 b.h.p. are also being purchased, at a cost of \$394,705, and \$3,608,640 is being spent on 1,000 50-ft. bogie box wagons, now on order from the American Car & Foundry Company. The New York Central 1945 rolling-stock programme thus runs to a grand total of \$11,303,665.

## New York Suburban Services Restored

From March 12, 1944, the Central Railroad of New Jersey was instructed by the office of Defense Transportation, under its Order ODT-R7, to withdraw 68 suburban passenger trains, used mainly by season-ticket holders, in the Jersey City-Newark-Elizabethport triangle, to the south of New York City, to give greater freedom on the lines concerned for the movement of wartime freight to and from the port area of New York and the industrial area of north New Jersey. The O.D.T. in mid-September last authorised the railway to resume these services.

## MEXICO

## New Locomotive Power

The 4-8-4 steam locomotives now under construction by the Baldwin Locomotive Works for the National Railways of Mexico will be the most powerful ever to have been built in that country. Each of these locomotives, with tender, will weigh 316 tons, and the class, of which 16 are to be built, is intended to make possible faster passenger and freight schedules over the Mexican main lines. The equipment will include oil-firing, one-piece cast-steel locomotive frames, and roller bearings. Two of the 2,000-b.h.p. diesel-electric locomotives of the "road" or long-distance type recently evolved by Baldwins, which have been on trial for some months in Mexico, have now been accepted and purchased by the National Railways of Mexico.

## ITALY

## Improving Railway Position

As a result of the completion of the emergency bridge over the Po to the north of Piacenza, carrying the Milan-Bologna main line, replacing the 2,625-ft. steel bridge which was destroyed during the war, the operation of trains between Milan and Rome via the direct route was resumed on October 17, thus improving considerably the communications between northern and central Italy. The original railway bridge over the Po to the north of Piacenza was the longest in Italy. It was double track but the emergency bridge replacing it is for single track only. The construction of the emergency bridge cost about £45,000,000 and some 500 workmen were kept busy on it night and day for about six months. A train leaves Milan daily at 8.30 a.m. and is timed to arrive at Rome the next day at 10 a.m. In the reverse direction departure is at 5 p.m. and arrival at Milan at 6.25 p.m. on the next day. This means an improvement of some 8 to 10 hours, compared with the previous rail journey between Milan and Rome, which over a round-about route took 33 hours. The construction of the emergency bridge

intended to carry the Milan-Domodossola main line (for the Simplon) across the Ticino river near Sesto Calende, 37 miles (60 km.) to the northwest of Milan, is reported to be proceeding apace and nearing completion. As the Milan-Arona-Domodossola line, 77½ miles long is not electrified and the Italian coal position is likely to remain critical, the Italian State Railways are in favour of a rapid conversion to electric traction but are handicapped by lack of materials. In this connection, there has been an exchange of views with Switzerland with a view to obtaining the necessary equipment from that country. The same applies also to the line Arona-Alessandria, 64 miles. The electrification of these two lines would greatly facilitate the Swiss traffic through northern Italy carrying oversea supplies from Genoa and Savona and Swiss export consignments in the reverse direction. No decision has been taken yet as to the conversions envisaged, as reported in *The Railway Gazette* of November 9, but to start the traffic as soon as possible Switzerland is prepared to contribute the coal necessary for working the Swiss trains over the steam sections concerned.

At Genoa, the port facilities are again in working order over a quay length of 3½ miles out of 15 miles of quays which the port had before the war. It is stated, that the cereal section of the port will soon be able to handle some 6,000 metric tons of cereals a day.

## AUSTRIA

## Development of Railway Traffic

The electrification of the main lines in Austria, which came to a standstill when the Germans took control of the country in 1938 is proving its worth now that coal supplies are at their lowest ebb. Services on the electrified lines are comparatively dense, although far from sufficient, considering the crowds of would-be travellers. The great problem is the shortage of rolling stock. Fast trains generally consist of a locomotive and one coach only.

In the area under the control of the Innsbruck management of the Austrian Federal Railways the old Austrian Operating Order and Regulations have been re-introduced. The administration is working under difficulties, for in addition to the destruction of Innsbruck Central Station, reported in *The Railway Gazette* of August 10 (page 149), the stations at Hall, Jenbach (the junction with the Zillertal line), Brixlegg, Kundl and Wörgl were also destroyed. Wörgl is an important junction where the electrified main lines from Salzburg and Munich meet. The most serious handicap for the restoration of the normal traffic was the destruction of the Inn bridge near Brixlegg. An emergency bridge, built by the American forces of occupation, was swept away by a flood early in August, but has been reconstructed since by the French forces of occupation, to whom the Americans ceded the control of the country as far as the eastern border of the Tyrol. In addition to the above devastations, war operations were responsible for the destruction of twelve railway bridges and viaducts in the Tyrol (including the Brixlegg bridge) and of three bridges and viaducts in the Vorarlberg province. While the Brixlegg bridge and other structures on the main line to the east of Innsbruck were being repaired, communication with the provinces east of Tyrol was being maintained via the single-track electrified standard-gauge line Innsbruck-Scharnitz-Garmisch-Partenkirchen, which involved a huge detour via Munich. For a period, the traffic on this line totalled 40 trains a day.

## The Movements of Railway Vehicles on the Track and the Forces Arising Therefrom\*

### A critical analysis of the interaction of flanges and rails, together with a résumé of the scientific principles involved

BEFORE dealing with the main features of the problem presented by railway vehicles riding on the track, it is interesting to consider the development of the various forms successively given to both wheel and rail during the last century, in the endeavour to improve their respective guiding properties.

Examination of remnants of Outram's rails about 1799 on English colliery lines, shows an "L" section, of which the vertical part served to guide the disc-shaped wheels. Later on, tracks such as those of Baader and Locher made use of two separate rail elements, respectively for vertical and horizontal guidance. Then appeared the bull-head rail, which proved sufficient on lines with few curves, and with it, several curious suggestions for the guidance of wheels, for example, that used by Arnoux in 1830 and later on the railway from Paris to Sceaux. The inclined rollers served to guide both wheel and axle. The idea of constrained curving still persists in certain measure to-day and is to be found in the Noble system, which does not provide for axle guidance and in the Wiesinger system, where the same rollers serve both to support and to guide. Other builders, such as Laingel, sought to eliminate sliding by using stepped coned wheels, the track rails being transversely displaced on curves.

The present form of wheel, with its coned tyre and shaped flange, is the outcome of numerous experiments and, together with the arrangement connecting the axle to the vehicle, ensures safe riding at normal speeds.

Where curved tracks abound, as on suburban railways, and on mountain lines, or where the speed is very high, the usual types of flanged wheels and axle connections are insufficient to ensure comfort and complete safety. The very pronounced wear, both of rail and of wheel flange, the somewhat slight security against derailment, the uneven running, and the resulting excessive stress on axles and rail fixtures, together with the discomfort of passengers, enhances the importance of the problem presented by the motion of wheels running on the track.

The paper deals with this problem; its conclusions are based on experimental observation and on strictly mechanical considerations, the detailed examination of several interesting and important points having had to be laid aside.

The friction arising between wheel and rail is fundamental for all railway transport. The frictional force  $R$  is equal to or less than the product of the frictional factor  $f$  and the wheel load  $Q$ , which are the variable quantities. As the direction of force  $R$  coincides with the resulting sliding motion between wheel and rail, its action is opposed to the direction of motion.

Force  $R$  not only determines rolling resistance, but also that due to curves, guiding pressure, security against derailment, maximum tractive and braking power, axle strain, wear of rail and flange, and—last but not least—freedom from hunting. It is therefore of great importance exactly to determine its precise position and value.

To facilitate this determination, let us

consider a two-wheel vehicle, with flanged conical wheels, the angle of coning being less than the angle of friction; and suppose that the axles have 2-3 mm. end play in the boxes. The coned wheel pairs generally show unequal tread diameters, according to their respective positions with relation to side play. When running on a straight track they constantly tend to alter their relative positions, their axles assuming various angles towards the vertical transverse plane of the vehicle. This swinging motion has a theoretical wavelength  $l$  which is given by Klingel's formula,  $l = 2\pi \sqrt{rs/\tan \beta}$ , where  $r$  is the tread diameter,  $s$  the half-distance between the treads of a wheel pair, and  $\beta$  the degree of conicity. This formula is applicable so long as the flanges do not touch the rails.

The frequency of the motion and its curvature determine the degree of smoothness of running. In other words, the wavelength and the radius of the axle's swinging motion must be as large as possible. Apparently, this would result from a reduction of the degree of conicity; but a reduced slope of the tread surface requires an increased amplitude of the wave motion, and leads, when the slope reaches 1 in 100 or thereabouts, to excessive flange wear on straight track.

The condition becomes more acute because of the difficulty in maintaining both wheel tyres at exactly the same diameter. Unequal diameters cause radial displacement of the axle, resulting in one-sided wear. Completely cylindrical tyres, or independent (free) wheels tend to excessive annular wear on straight track, as when once they run flange-on against one rail they tend to stay there.

The possible improvements in running conditions thus are limited, and practice shows that slightly conical types wear quickly because of the excessive pressure engendered at the points of contact between the steeply inclined rail head and the flatter type.

Worn tyres alter the position of the wheel-pairs, shortening the wavelength and thereby tending rapidly towards bad hunting. The limited width of the curved part of the railhead causes uneven, jumpy motion of the tyres, and as their annular wear is of small radius, the relative positions finally become such that contact with the rail simultaneously takes place at two points. This gives rise to sudden changes in the rolling tread which result in a swinging motion and more uneven running.

In short, reduced coning of tyres, when tyres are new, may improve running temporarily, but the life of the tyre is shortened, in proportion to the flattening of the cone.

So far, the axle has been considered to be running free; but when the clearances between the axle and frame are taken up, sliding arises between wheel and rail in a manner determined by the coefficient of friction, wheel pressures, and tractive or braking forces—the applied forces are equal to the frictional forces in the case of uniform motion. The axis of rotation of the vehicle is determined by the tread circles, wheel pressures, and coefficient of friction.

The "creep" hypothesis, which prevails in England, assumes that in place of actual sliding at the point of contact, a form of creep takes place, resulting from material

distortion of the "fibres" of both rail and tyre being materially displaced in the neighbourhood of the point of contact. Now the relative movements between wheel and rail can be calculated; and if such movements were represented by elastic distortion of fibrous materials of both wheel and rail, this would imply the necessity of very great forces arising—far greater than gliding friction. The relative movements, therefore, must take place by sliding. It is by no means excluded that certain elastic deformations actually take place; their effect on the laws of motion, however, practically may be neglected.

The latest researches lead to the abandonment of the old formula relative to resistance on curves, wherein such factors as wheel-base, curve radius, and coefficient of friction hardly entered into account and the constructional form of the vehicle was not considered at all. However the paper shows that it is possible to establish a formula which is both simple and easy to apply, and at the same time, is sufficiently accurate and includes the factors just mentioned.

Before going further, it is convenient to enumerate certain fundamental rules deduced from theoretical considerations. These are:—

(1) The distance between the leading axles shall be as great as possible.

(2) The diameter of leading wheel-pairs shall be small.

(3) The nosing angle of leading wheel-pairs must be as small as possible.

(4) Wheel pressures should remain unchanged during running.

(5) Tractive effort and braking forces are to be applied as constant moments to the driving axle.

(6) The moment of inertia of the vehicle should be as small as possible, overhanging loads being avoided.

(7) Bogies are to have a long wheel-base.

(8) Tyre and flange wear is to be reduced as far as possible.

All the above requirements are recognised generally, but rules (3) and (5) scarcely ever are followed strictly in practice. The above considerations differ from former practice because they result in precise instead of general measurements. This, however, implies considerable alterations if they are to run properly at high speeds.

It is rule (3) which serves most particularly to obviate too heavy guiding forces being applied to the axle, as these tend to damage the track, particularly in the case of steam locomotives. Locomotive designers have striven by various experimental means to overcome this serious obstacle. Success would facilitate the maintenance of a good railway track. The fault lies with the vehicle, and must be eliminated from it, if a properly laid track is to be maintained in good condition.

It will be realised why the side controlled two-axle bogie is insufficient to ensure perfect guiding of a locomotive, either on a straight or on a curved track. The excessive guiding forces acting on the first driving axle are a source of danger on curves and the limiting controlling forces are insufficient to ensure perfectly smooth running on the straight.

In the case of locomotives, it has become customary for their curving capacities to be considered geometrically. Consider a 0-10-0 locomotive, with flangeless middle axle and two end axles so connected as to allow for side movement on curves. It is apparent from the preceding considerations that such a vehicle cannot prove satisfactory, although the design is susceptible of an improvement, namely, the arrangement of two driving axles to guide it by

\* Paper by M. Roman Liechty, M.I.Loco.E., presented before the Institution of Locomotive Engineers on October 31, 1945. Abridged

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means of a lever, the resulting guiding forces being then very small. Provision can be made also for both driving axles to be connected to a running axle which contributes to guiding by means of powerful controlling springs.

The imperfections of both these designs are due to the excessive nosing angles, caused by the connecting rods. The application of independent drive to steam locomotives would be very helpful in this direction, and would improve the evenness of tractive force transmission and (with small driving wheels) the actual balance.

In many cases steam locomotive design may be improved by following electric

locomotive practice, though even in respect of the latter there is still much to be done. The rail car and the multiple-unit train are the best modern vehicles in regard to the requirements considered in the paper.

Numerous designers have sought to reduce wheel and rail wear by employing independent wheels mounted on, and revolving around, pins in place of axles. However, since (as the paper shows) side-slip is much more important than lengthwise slide, the system of independent wheels loses much of its merit. One-sided nosing on the straight, due to insufficient radial adaptability, together with excessive guiding forces and resulting danger of derailment on curves, are unfortunate

characteristics of a design of this kind. Springing is considered generally to be of prime importance; its object is to compensate vertical shocks due to passing over points and rail ends, and to minimise their effect on the vehicle. The springs and compensating shock absorbers are calculated easily for a given load and frequency. The springing of a vehicle must never be called upon to lessen swinging movements of the car body about its own axis, caused by lateral acceleration of the running frames. This task, which is often left to the springing, calls for very different springing requirements, which themselves are subject to alteration due to tyre wear, and cannot be fulfilled by one spring alone.

## New Steam Locomotives for Swedish State Railways

*The first order for new steam locomotives since the electrification of the system was begun*

In Sweden, as in Switzerland, where ample supplies of hydro-electric power can be obtained cheaply, electric traction has been extensively adopted during the present century. In Switzerland this change began earlier and followed a somewhat gradual course, the conversion from steam to electric haulage taking place section by section. In Sweden, on the other hand, it was not until the 1920s that a big move was made in this direction; but once the decision had been made, the project was carried out much more rapidly. In Sweden, however,

891 mm. (2 ft. 11 in.) gauge line, which had been purchased, to be signed by the Swedish State Railways for over twenty years. Commenting on this order, the publication *S. J. Nytt*—the house journal of the Swedish State Railways—gives some interesting information about the steam locomotives of the State system.

Not a single standard-gauge locomotive had been built for the Swedish State Railways since the early 1920s, when the electrification of the system was begun in earnest. As the conversion proceeded,

Railways on taking over the rolling stock of the many company-owned lines in recent years. Before this development the State Railways had 26 different types of locomotives, but this has now been increased to no less than 82. Forty-six of these 82 types, however, comprise only one or two specimens each.

As to future requirements, the State Railways Administration proposed in the first instance to recommend that ten three-cylinder 4-8-0 locomotives should be ordered, and a sum of 3,750,000 kronor (£220,000) was therefore placed at the disposal of the Administration for this purpose.

Opportunity has been taken in ordering the new locomotives to effect several technical improvements over earlier types. The design selected was considered to be one most nearly fulfilling the demand for

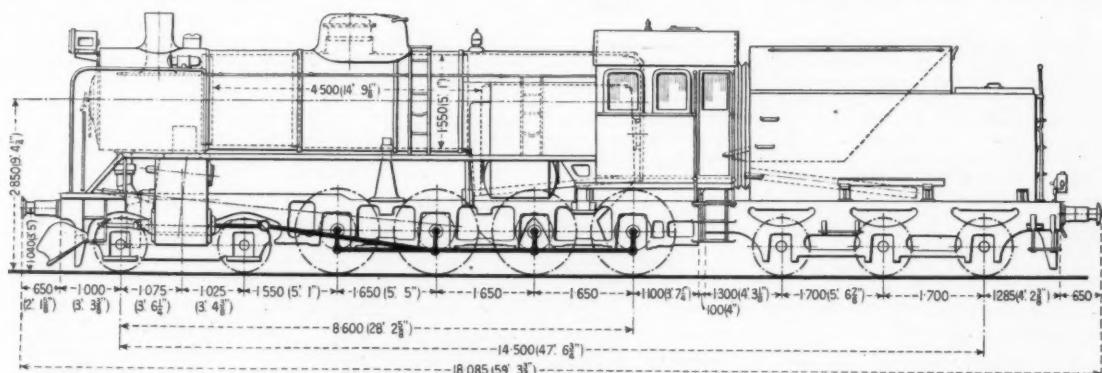


Diagram showing principal dimensions of the locomotive

steam traction still plays a highly important part, and it is significant that, more than twenty years after the launching of the electrification scheme, there were still some seven hundred standard-gauge steam locomotives in service on the Swedish State Railways. It may be mentioned here that the electrified portion of the Swedish State Railways at present comprises 4,666 kilometres (2,893 miles), or 45 per cent. of the entire mileage, on which is carried 86 per cent. of the total volume of traffic of the State-owned lines.

Recently the Swedish State Railways ordered ten large steam locomotives for goods traffic from the Nydqvist & Holm Company, of Trollhättan; the contract for the tenders was placed with the A.-B. Svenska Järnvägsverkstäderna. The remarkable feature of this order is that it is the first contract for steam locomotives (apart from three small engines for a

sufficient steam locomotives were transferred to other lines, where they were still needed to compensate for the regular scrapping of obsolete types. A drawback to this arrangement, of course, was that the steam-operated lines had to be worked by rather old locomotives.

The average age of the Swedish State Railways' total stock of 800 locomotives (of which some 700 are standard gauge) is 33 years, which in some quarters is regarded as the normal period of utility of a steam locomotive. In fact, over 100 of the steam locomotives are over 40 years old. Moreover, any future incorporation of privately-owned lines into the State system will afford no improvement in the position, as the average age of the private companies' engines also is about 33 years.

The shortage of steam locomotives has been further aggravated by the great variety of locomotive types acquired by the State

ample power, low axle load, and speed for the service intended. The locomotives are intended to haul freight trains of 450 tons on the Inland Railway. The highest permissible axle loading on this line is only 12,500 kg., although in the engines just ordered it is 12,800 kg. By adopting the three-cylinder arrangement, however, a good balance is obtained between the reciprocating parts of the engine, whilst by moving the boiler a short distance forward, as compared with earlier types the stresses imposed by the coupled wheels on the rails have been reduced to the limits allowed on the Inland Railway.

The length of the new locomotives over buffers is 59 ft. 3 1/2 in., and the weight in working order is 74 metric tons, or 116 tons with the tender. A notable advance in comparison with earlier examples of this type is the employment of "SKF" roller bearings for all axles.

November 30, 1945

## Restoration of French Signalling Installations

*The French National Railways effected much standardisation work during the occupation and are applying new designs in restoring the signalling*

By J. G. WALTER,

*Ingénieur Principal, Fixed Equipment Department, French National Railways*



No. 3 mechanical signal box at St. Etienne-Châteaucreux, S.N.C.F.  
after repair on March 9, 1945

The signalling installations on the S.N.C.F. lines had become very seriously damaged by the time France was freed of the Germans by reason of (1) aerial bombardments carried out by the Allies; (2) sabotage effected by French railwaymen in an endeavour to hamper the enemy's transport movements, and (3) destruction carried out by the retreating Germans themselves. The overhead and underground line wires, serving for signalling and telecommunication circuits, of which some 50,000 km. (over 31,000 miles) suffered damage of some kind, had almost everywhere to be restored to a working condition and at many places had to be completely renewed. The installations at the stations which had suffered bombardment were for the most part seriously damaged. A total of 547 mechanical and electro-mechanical signal boxes and 112 of the all-electric type, had to be more or less entirely repaired or rebuilt.

### Conditions Affecting the Work

To understand the conditions under which the extensive task of restoration is having to be carried out it should be borne in mind that the French national system was formed in 1938 of railways formerly worked by several different companies and the then existing State Railway. The new management decided to encourage the working out of new designs, with a view to unifying and improving the signalling and electrical equipment, which had differed considerably as between the various railways. This work was put in the hands of the most experienced engineers of the old undertakings and carried out in consultation with the signalling industry; it was pushed forward actively during the occupation, unknown to the Germans. As soon as a new design was completed that piece of equipment was built and thoroughly tested

under service conditions, enabling it to be used at once directly the circumstances allowed. During the whole period of the occupation, therefore, the S.N.C.F. management strove to improve the details of its signalling equipment, both mechanical and electrical, such as the mechanical, electro-



The signal box at St. Etienne-Châteaucreux, S.N.C.F., after bombardment on May 26, 1944

mechanical and electric frames, manual block and automatic-signalling apparatus, rod and wire transmissions, etc.

The guiding principles adopted in the work of restoration are three:—

(1) The arrangements formerly existing are retained wherever moderate damage only has been experienced and the track layout is unaltered, or only slightly altered

(2) Restoration is made to follow the reinstatement of the permanent way in such a manner as to allow of speedy resumption of traffic under signal protection, if only of a simple kind. This necessitates carrying out the greater part of the signalling work during the preliminary stage of restoring the track layout.

(3) In effecting the final stage of restoration the new standard arrangements are applied to the greatest extent possible, notably when an installation requires complete replacement.

It follows from the above that the old installations, except in the case of very simple ones or where the damage received is trifling, are not at once restored to their final state, but are found generally to require some temporary repair work. In the more complex installations this work is effected in several stages, in view of the need of providing the necessary traffic facilities at the earliest possible moment. As a rule these stages take the following form:—

Stage 1 may be considered as a measure of first aid and consists in getting the traffic moving again, by the quickest possible means, over such paths as the operating department considers essential. Instruction sheets therefore are drawn up for the large stations and important junctions, giving the order of priority to be applied to the re-establishment of facilities for through running or shunting movements. At this stage points are operated by hand locally and suitably secured, which necessitates inspecting each route to be taken and making sure everything is in order.

At the same time, re-establishment of the means of operating from a distance is taken in hand, but if this cannot be effected quickly, levers with quadrants and catch-handles are fixed adjacent to those points the operation of which is absolutely necessary and interlocked with one another and with levers operating the signals, thus ensuring the correct manipulation of the latter. This first stage is carried out directly the state of the tracks will permit

and, generally, for some time now, has been completed throughout the system.

Stage 2, which may be looked on as the real preliminary to getting an installation back to proper working order, consists in restoring the means of operating at a distance as rapidly as possible after effecting the first-aid work. Two cases have to be considered, namely:—

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(a) *Mechanical signal boxes*: Provisional arrangements are made as rapidly as possible with the aid of frames and locking-boxes and other purely mechanical equipment.

(b) *Electric power signal boxes*: In those cases, frequently met with, where the signal boxes are damaged, but the outdoor equipment is not, or can be repaired easily, the following course is adopted, whether for individual lever or route lever boxes. The wiring system is used to control the point and signal motors from a temporary frame, formed either of interlocked circuit controllers fitted with Bouré key locks, or lever handles, often of simple form, as may be available. During this stage, control over the operation of the points and signals is re-established, but until the track circuits are working again the speed of trains is limited to 30 km.p.h. (18½ m.p.h.) through the area concerned. This arrangement was adopted also at certain stations where there were large mechanical signal boxes seriously damaged, as at Avignon, as it was easier to do this than to restore the mechanical equipment.

This second stage of the work is actually fairly well advanced and there are now numbers of points over which speed can be maintained. To effect this work as efficiently as possible in the present conditions of shortage of material and the difficulty of manufacturing relatively complicated equipment, an inventory has been taken of all stock items and of those in service but not absolutely essential. The latter have been systematically removed and made use of in the restoration work. Every item that could be repaired also has been dealt with at once.

#### Final Stages of the Work

The adoption of standard designs for the final reconstruction work has several advantages. It reduces the amount of planning required, facilitates the obtaining of equipment, and keeps down the amount of stock needed in the future. When, however, an installation has to be restored to something approaching its original form, standard methods are followed as far as this circumstance will allow. If, however, an installation has to be completely replaced, signal boxes controlling running lines are being built to designs coming under the five following headings:—

(1) *Mechanical*.—A particularly economical arrangement, limited in principle to not more than 60 levers in one continuous row.

(2) *Electro-mechanical*.—This is also an economical design, suitable where more than 60 levers are required. They are arranged in two rows, the lower ordinary levers of the type used in the standard mechanical frame, the upper of miniature levers placed over them. The advantage of this type of box is that it has about three times the capacity of a mechanical one of the same size.

**MUREX LIMITED.**—At the ordinary general meeting of Murex Limited, Mr. George P. Joseph, Chairman, said that there had been a great wartime expansion in the welding industry. The urgent necessity for increased wartime production and the saving in materials and labour that resulted from its application rendered its use universal. Murex Welding Processes Limited had made a notable contribution despite difficulties, in common with other manufacturers, of obtaining adequate supplies of raw materials, labour scarcity, and

(3) *Electric, using individual levers*.—This type is reserved for exceptional cases where individual levers are indispensable, or have to be operated so fast that electric working must be used. In principle route lever working is always to be preferred.

(4) *Electric, using route levers, with mechanical and/or electric locking*.—The well-known type already met with at numerous large stations in the Western District.

(5) *Electric, using route levers without any actual locking*.—These boxes can be of the purely "relay interlocking" type, or include certain mechanical mechanism which performs the selection of the routes to be set up, known in France as "param combinateur" or "télécombinateur".

Marshalling or shunting yard boxes come under the following headings:—

(1) *Mechanical (shunting and marshalling)*.—The standard type uses trailable levers actuating pulleys on the half-revolution principle, spaced the same as the levers in an ordinary type frame, trailing and holding of the point tongues being effected by means of a spring with throw-over device.

(2) *Electric (sorting)*.—The standard type covers automatic or semi-automatic sorting at humps and uses the "falling ball" device (see *The Railway Gazette*, February 2, 1934, page 183), where each wagon is repre-

sented by a ball which falls through mechanism in the controlling apparatus as the wagon descends. (There are several such installations in large yards on the S.N.C.F. system.)

The electric power boxes for running lines are being built by the various signal manufacturing firms. The electro-mechanical system is furnished by Saxby of Creil, to designs agreed on with the S.N.C.F. The electric sorting installations are made by the Aster Company. It is impossible to say when all these boxes will be finished as so much depends on the capacity of industry generally and the signalling firms in particular.

#### Results Obtained

Beginning in September, 1944, the block working progressively was re-established starting with those sections where traffic was heaviest. From the beginning of 1945, the block, both manual and automatic, has been functioning once more, or can be quickly restored, except at a few places where there has been very great damage and the reconstruction of the signalling is not yet required. The following tables give a summary of the situation as at August 1, 1945, while the accompanying photographs show what has been done at the No. 3 mechanical signal box at St. Etienne-Châteaureux, damaged on May 26, 1944, and put in service again on March 9, 1945.

TABLE I—MECHANICAL SIGNAL BOXES

State of the work	District					Total
	Eastern	Northern	Western	South-Western	South-Eastern	
Restored to their original condition ...	36	62	21	7	78	204
In course of being so treated ...	12	12	18	1	42	85
In temporary operation and being completed ...	7	3	16	3	10	39
In temporary operation and to be completed later ...	11	—	8	4	7	30
In temporary operation and to be abolished later ...	8	11	2	5	30	56
In course of being put into temporary operation ...	10	8	1	4	22	45
To be dealt with later ...	15	10	2	21	4	52
Not to be restored at all ...	6	14	1	—	19	40
Number of signal boxes involved ...	105	120	69	45	212	551

TABLE II—POWER SIGNAL BOXES

State of the work	District					Total
	Eastern	Northern	Western	South-Western	South-Eastern	
Restored to their original condition ...	1	25	2	—	2	30
In course of being so treated ...	2	15	4	—	2	23
In temporary operation and being completed ...	1	—	3	—	—	4
In temporary operation and to be completed later ...	—	—	1	1	—	2
In temporary operation with mechanical equipment; to be abolished later ...	—	5	3	2	1	11
In course of being put into temporary operation with mechanical equipment ...	1	20	—	1	—	22
To be dealt with later ...	5	4	—	9	1	19
Not to be restored for the time being ...	1	3	—	—	—	4
Number of signal boxes involved ...	11	72	13	13	6	115

the use of substitute materials. The company's staff, both technical and administrative, had co-operated with the Government and service departments in the solution of many problems that were encountered. The development during the war of the many applications of welding should undoubtedly be reflected in an increased peacetime demand for electrodes and equipment. A considerable amount of reconstruction work would be necessary at the company's factories in the post-war years.

The directors had under consideration plans for post-war expansion which would call for a substantial addition to the company's cash resources now depleted by the heavy incidence of wartime taxation and the expenditure of over £1,000,000 on the provision of additional buildings and plant. Present indications were that the current year, with the numerous problems arising from the termination of the war, would be difficult, and a return to normal trading would depend on the speed of general reconversion.

## British Railwaymen in North-West Europe

*An official tribute to a noteworthy series of achievements*

*By Brigadier R. F. O'D. Gage, C.B.E., M.C.*

**I**N *The Railway Gazette* of October 12 attention was drawn to the scant publicity accorded to the work of British and Canadian railway troops during the recent campaign in North-West Europe. While it is believed that the official history of the campaign will reveal that these railwaymen played a vital part in sustaining our armies, the following brief summary of railway activities on the Continent indicates that railwaymen did, at least, render a good account of themselves.

The Order of Battle of the British Liberation Army included some 9,000 British and Canadian railway troops, organised into three main groups—railway construction, railway operating, and railway mechanical. A large proportion of these men were peacetime employees of the British and Canadian railway companies, and before the war a number of them had joined one or other of the Supplementary Reserve units sponsored by the British railways. Many commanding officers were members of the Supplementary Reserve; in the case of railway construction, every commanding officer of the rank of Lt.-Colonel was a pre-war member of that organisation.

The heavy air attacks directed by the Allied Air Forces against railway installations, coupled with extensive demolitions executed by the Germans, caused widespread devastation, the rapid repair of which was an engineering task of great size and complexity; on more than one occasion upwards of 10,000 men and hundreds of earth-working and other machines were employed on repairs. Between D-Day and VE-Day the railway construction troops, with attached

pioneers, built or repaired 122 railway bridges of a total length of four miles on British lines of communication alone, and opened a main railway route from Bayeux to Bremen, a through distance of about 650 miles, in addition to many branch lines. Among the major obstacles bridged were the Rivers Seine, Somme, Maas, and Rhine. The last-named involved the construction of a new bridge 2,340 ft. long over the main river, and the repair or strengthening of 1,662 ft. of bridging on the approaches, making a total length of 4,002 ft. of bridging. The writer has yet to hear of a longer railway bridge constructed anywhere during the late war. The bridge, which carries 21 trains each way daily, was built and opened in exactly one month.

Experience in previous campaigns had shown that it is one thing to reopen a devastated railway but quite another to work a heavy traffic over it promptly, and North-West Europe was no exception. The railway operating branch had a strenuous time getting the routes organised, communications re-established, locomotives and rolling stock distributed, shed facilities restored or improvised, and coal stocks built up. To supplement the scanty stock of liberated locomotives, a total of 1,035 British-built freight engines and 129 shunters was imported, the first two landed over the open beaches of Normandy. These engines were operated initially by railway troops and later turned over to the civilian railwaymen as the latter returned to work and could be reorganised. Throughout the whole campaign the average daily tonnage of military stores lifted by rail was 18,000 tons, and, in addition, a heavy passenger service

and essential civilian freight traffic were operated.

Probably the most remarkable operating achievement occurred in February and March, when a service of 30 trains each way daily was operated regularly over the single line section between s'Hertogenbosch and Nijmegen. It speaks well for the training and skill of the railway troops that, although much of the traffic was operated on the "telephone and ticket" system, there was not one serious accident attributable to operating faults, though there were "incidents" caused by enemy air attacks on locomotives, and so forth.

Maintenance of imported locomotives and repair of liberated locomotives and rolling stock was a heavy commitment, rendered no easier by the more or less complete obliteration of all repair shops. Eight railway mobile workshops, capable of dealing with light repairs, were imported into the theatre, and some shops were restored and put into service using a mixture of repaired and of imported machines. The three main shops developed were at Caen in Normandy, Malines in Belgium, and Tilburg in Holland. Up to VE-Day the totals of locomotives and rolling stock repaired and put into service were 2,794 locomotives, 4,347 wagons, and 982 coaches.

The work of the signals department included the re-establishment of communications over 1,250 route miles, the installation of 18 selective train-control circuits, and the provision of numerous telephone exchanges, teleprinter facilities, and subsidiary omnibus and tie lines.

Thus, not only did the work of British railway troops enable vital trains of supplies to be delivered to our armies in their rapid advances across France and Germany, but it also materially eased the sufferings and discomforts of the liberated peoples in Western Europe.

(See illustrations, pages 569 and 570)

### Constructing the Beki Bridge, B.A.R.

*As a link in the Burma lines of communication, this bridge (seven spans of 150 ft. on 70-ft.-deep well foundations) was built across the Beki River in eight working months*

**T**ODAY the most active spill channel of the torrential Manas River—rising in the perpetual snows of the Himalayas—is the Beki, tributary of the great Brahmaputra. Its unruly behaviour has been responsible for washing away a number of bridges that crossed it. Though preliminary measures, including collection of material at site, had been taken, the previous year, the recently-constructed Bengal Assam Railway bridge—built to facilitate the movement of supplies for the Burma campaign—was completed in the eight working months of one season. Its foundations consist of 25-ft. dia. circular wells, and the superstructure of seven spans, each 150 ft. in length.

The well of pier No. 6 was being sunk by open dredging on an artificial island of earth, enclosed in a bamboo pile and brushwood ring, when it had the misfortune to strike the remnants of the foundations of an earlier bridge. These consisted of a mass of wreckage, including 15-in. hardwood piles braced with steel rails, and completely stopped the sinking of the new well. Several of the piles were cut through with hardened rail chisels driven by a steam pile hammer. A naval officer was called in to assist with diving gear, an under-water flame-cutting outfit, and telephone equipment. He was

able to fix slings to the obstructions under the cutting edge of the well curb, and direct through the telephone the lifting and smashing operations. Eventually, after a fortnight's delay, the well passed through the obstruction, and with day and night sinking was finally founded in boulder and gravel strata at full depth.

Well No. 7 had to be sunk in the main all-seasons swift-flowing channel, which is 18 ft. deep even in the dry season; the well therefore, was founded on a steel caisson. This, after being riveted on the bank, was launched down a slipway and warped to site. There it was moored in a pile dock driven round the foundation site, centred with adjustable tackle, and pitched by filling in the space between the outer and inner skins with concrete. It was then sunk to full depth by open dredging from a floating sinking set.

During the dry season, four of the seven 150-ft. girder spans were erected on stagings on the dry river bed. The other three spans were over water, and were launched telescopically with the main girders at close centres from the eastern abutment, using a full-span launching nose, which remained in position to receive the next span. The girders were afterwards opened to full spacing on the piers. By this method

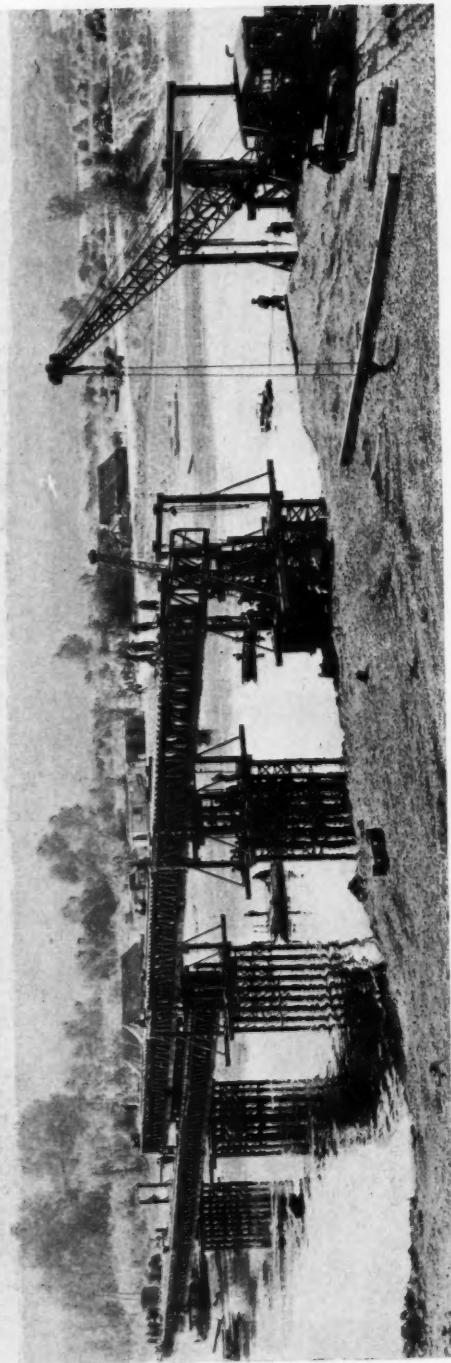
work was able to proceed uninterruptedly despite spates and floods.

Beforehand the Americans were very sceptical of the ability of the British and Indian staff to sink the wells, build the piers on them, and assemble, erect and launch several thousand tons of steel superstructure in one working season, a task, they considered, that would tax the ingenuity and organisation of leading bridge builders in the United States. They were wrong, however, as despite delays, the work was actually completed one month ahead of programme on June 1, 1945.

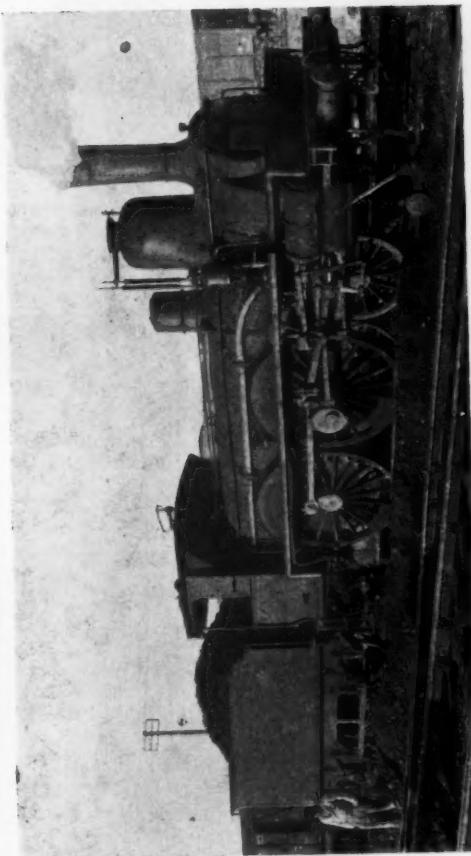
In addition to the bridge itself, there were other major works to be carried out in connection with it. For instance; two long guide banks were required to train and confine the river. These were of earth protected by hundreds of trainloads of boulder pitching stone. With the assistance of the Americans, one 50-wagon train a day was duly placed in each of the two quarries, loaded with stone previously blasted, and run to the Beki according to regular schedule. This was made possible by the assistance afforded by R.E. and I.E. Military Construction Companies. The whole job is an excellent example of rapid construction work of a permanent kind.

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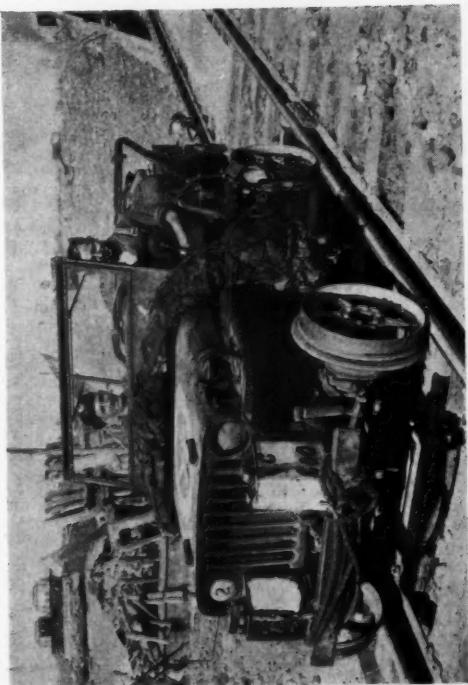
**INDIAN GOVERNMENT TO PURCHASE AHMEDABAD-PRANTEJ RAILWAY.**—The Government of India has decided to purchase the Ahmedabad-Prantej Railway on December 31.



*Bridge over the River Seine on the Louviers-Charlerval line. Three 75-ft. deck type U.C.R.B. spans are in position, and the three remaining spans are being launched. The bridge was built between September 4 and 22, 1944. Later, one of the spans was converted to a through type lifting span for the benefit of river traffic.*



*French locomotive repaired by R.E.s., at Caen on December 12, 1944. On the Cherbourg-Caen line, the British operated the Caen area, and the Americans Cherbourg.*

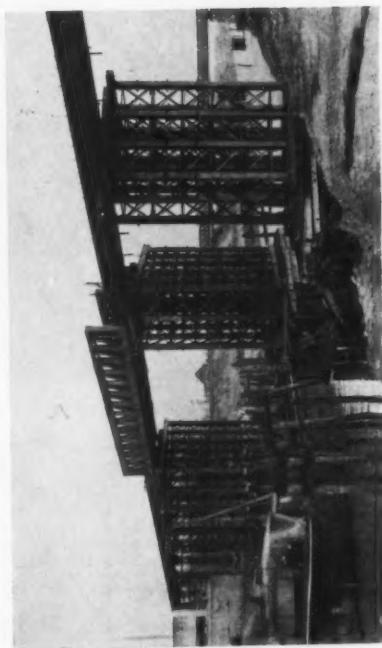


*A jeep converted by British R.E.s. of a Railway Construction Company to run on a section of the Cherbourg-Caen railway.*

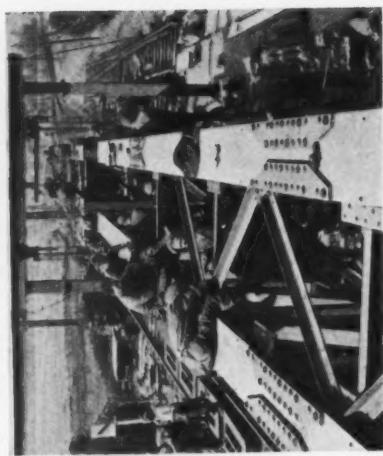
## British Railwaymen in North-West Europe



American locomotive and Belgian wagon on a  
British-built bridge over the River Orne  
was taken on December 14, 1944



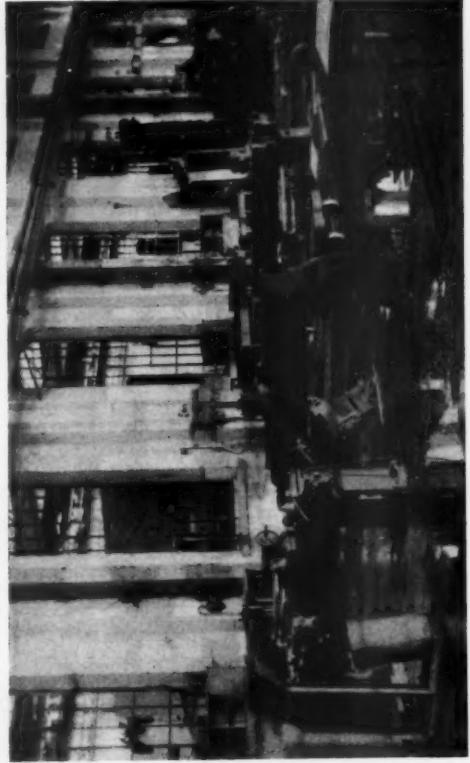
Albert Canal Bridge at Heerenthal, built on wooden piles of German  
replacement of original bridge destroyed by Allies in 1940



Royal Engineers building-up span of new  
railway bridge over the River Orne



Cleaning-up the Gare Maritime, Calais, showing reconstructed track.  
The view was taken on December 14, 1944



Interior of turnery in main Dutch repair shops at Tilburg. Headstock and  
gears of machine tools were blown

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## RAILWAY NEWS SECTION

## PERSONAL

Mr. Herbert Edgar Parkes has been re-appointed a permanent member of the Railway Rates Tribunal for a further period expiring November 3, 1948.

Lord Burghley has been re-elected to the board of the National Provincial Bank Limited. Lord Burghley was formerly a Director of the bank, but resigned in October, 1943, on being appointed Governor & Commander-in-Chief of Bermuda. He is a Director of the London & North Eastern Railway Company.

Mr. Warren Storey, formerly Electrical & Lighting Assistant to the Chief Mechanical Engineer, Great Southern Railways (Eire), has been appointed Electrical Engineer, Irish Transport Company.

In the new French Government, M. Jules Moch has been appointed Minister of Transport & Public Works. M. Raoul Dautry (a former General Manager of the French State Railways) remains Minister of Reconstruction & Town Planning.

We regret to record the death in England on November 23, at the age of 60, of Mr. William George Hills, General Manager, Ceylon Government Railway, who recently left Ceylon on leave preparatory to retirement. A portrait and biography of Mr. Hills appeared in our August 24 issue.

Consequent on the retirement last March of Mr. A. T. Pegge, Mr. A. E. Howell has been appointed Agent & General Manager of the Barsi Light Railway. Mr. Howell has held important posts on the North Western Railway, India. It may be recalled that Mr. G. C. Assheton Smith, formerly Deputy General Manager (Rationing & Recruiting), N.W.R., India, had been appointed to succeed Mr. Pegge, but died before he was able to take up the position.

We regret to record the death, at the age of 78, of Mr. Robert Park, who retired at the end of 1922 from the position of General Manager & Solicitor of the Highland Railway. Mr. Park was born in Edinburgh; he was educated at the Edinburgh Academy, and afterwards attended law classes at Edinburgh University. In 1883 he began training for the Law in the office of Dove, Lockhart & Smart, S.S.C., Edinburgh, and passed through the various departments. In 1893 he went to St. Andrews as Assistant to Mr. J. L. Macpherson, Solicitor, and in 1898 he commenced business on his own account as a solicitor in Coatbridge. He was appointed Secretary of the Highland Railway in 1901, and held that position until the end of 1910, when he became General Manager & Solicitor.

Mr. E. H. d'E. Darby, B.A., M.Inst.C.E., who, as recorded in our November 16 issue, has retired from the position of Assistant Engineer, Chief Civil Engineer's Department, Watford H.Q., L.M.S.R., was educated at Cheltenham and Clare College, Cambridge University, taking the B.A. degree (Mathematical Tripos) in 1902. In October of that year he began a term of pupillage under the late Mr. E. B. Thornhill, then Chief Engi-

nier transferred to St. Pancras as Assistant Engineer (Permanent Way). He was appointed Assistant Engineer, St. Pancras, in November, 1937. He is a Major in the Engineer & Railway Staff Corps, R.E. (T.A.).

Mr. Henry J. Peacock, O.B.E., Assistant Superintendent of the Line (Cardiff), Great Western Railway, is retiring at the end of the year after completion of almost 48 years in the company's service.

## VICTORIAN GOVERNMENT RAILWAYS

Mr. Evan Richard, Engineer of Maintenance, is retiring, and Mr. W. O. Brown, formerly Engineer of Special Works, has been appointed to succeed him.

Mr. H. C. Thomas, formerly Metropolitan District Engineer, succeeds Mr. Brown.

The following announcement appears in the Supplement to *The London Gazette*, dated November 13, under the heading of Territorial Army—Royal Engineers: Engineer & Railway Staff Corps:—

William Wood, M.I.E.E. (358222), to be Major, October 3, 1945.

Mr. Wood is Signal & Telegraph Engineer, L.M.S.R.

Dr. L. Douglas, D.Sc. (Engineering), M.I.Mech.E., recently arrived in England from Washington (where he was Advisory Engineer to the South African Railways & Harbours, and a Director of the Union of South Africa Government Supply Mission) and has taken up duties as Advisory Engineer to the South African Railways & Harbours, and to the Office of the High Commissioner for South Africa, London. Mr. W. H. Maass, M.I.Mech.E., M.I.Loco.E., who has been performing the duties of the latter post in an acting capacity, reverts to his position as Assistant Advisory Engineer to the South African Railways & Harbours, and to the Office of the High Commissioner for South Africa, London.

## L.N.E.R. ALL-LINE COMMERCIAL SCHOOL

Mr. H. F. Sanderson, until recently District Goods Manager, Newcastle, L.N.E.R., has been appointed to take charge of the L.N.E.R. All-Line Commercial School, which will be opened shortly at Darlington.

We regret to record the death on November 20, after an operation, of Mr. James Henderson, a Director of United Steel Companies Limited, and Joint Deputy-Chairman of the Appleby Frodingham Steel Co. Ltd., aged 77. He was the last President of the National Federation of Iron & Steel Manufacturers in 1934-35, and was largely responsible for the changes which resulted in the formation of the British Iron & Steel Federation, of which he was Past-President.



**Mr. E. H. d'E. Darby**

Assistant Engineer, Chief Civil Engineer's Department, L.M.S.R., 1937-45

neer of the London & North Western Railway. Part of this period was spent in the drawing office at Euston, and part assisting on the construction of Garston New Dock, where he became Assistant to Mr. W. E. Thornhill in 1905, remaining on this work until its completion in 1910. He then was appointed Assistant to the District Engineer at Walsall, where he remained until 1917, except for a short period of railway work in France. He was then for a short time temporarily in charge of the District Engineer's office at Bangor, and from January, 1918, acted as District Engineer at Crewe, which appointment was confirmed in 1919. In September, 1920, he was appointed District Engineer, Manchester, the position he held until June, 1928, when he went to Derby as Acting Divisional Engineer (Eastern Division), which appointment was confirmed in January, 1929. When the Chief Civil Engineer's Department was reorganised in 1935, Mr. Darby was

November 30, 1945

**Mr. G. H. Griffith**General Manager, Pullman Car Co. Ltd.,  
1928-45

Mr. G. H. Griffith, C.B.E., who, as recorded in our November 16 issue, has retired from the position of General Manager, Pullman Car Co. Ltd., was educated at Oswestry School and entered the service of the London & North Western Railway in June, 1896. In 1902 he was appointed Assistant Divisional Traffic Superintendent on the Egyptian State Railways; was promoted Assistant to Traffic Manager in April, 1905; Divisional Traffic Superintendent, Upper Egypt, August, 1906; General Traffic Superintendent, Alexandria, January, 1909; Goods Manager, January, 1919; and Deputy General Manager, January, 1924. Mr. Griffith was appointed General Manager of the Pullman Car Co. Ltd. in 1928. His Egyptian decorations are:—Fourth Class Order of Mejidieh, 1911; Third Class Order of the Nile, 1916; and Third Class Order of Ismail, 1925. Mr. Griffith served during the first European War from 1914 to 1919, and was Honorary Major, R.E. Rail

**Mr. C. J. Lamb**Appointed District Locomotive Superintendent,  
Burntisland, L.N.E.R.

Transport Department. He was mentioned in despatches and was made an O.B.E. He was made a C.B.E. in 1927.

Mr. Cecil John Lamb, B.Sc., A.M.I.Mech.E., Acting Assistant Locomotive Running Superintendent (Scottish Area), L.N.E.R., who, as recorded in our November 23 issue, has been appointed District Locomotive Superintendent, Burntisland, was born on May 6, 1906, and was educated at Aberdeen Grammar School, Glasgow University, and Royal Technical College, Glasgow. He commenced his apprenticeship at the Locomotive Works, Inverurie, in 1923, and completed his training at Cowlaire Works. Mr. Lamb's appointments have been:—Running Foreman, Ferryhill, Aberdeen, 1929-32; Locomotive Shed Foreman, Hawick, 1932-34; Locomotive Shed Foreman, Hartlepool, 1934-37 (he received special training in operating, goods and

**Mr. J. C. Lavandera**Appointed Commercial Assistant to General Manager,  
Buenos Ayres & Pacific Railway

passenger commercial, in the Darlington District, 1935); Stationmaster & Locomotive Shed Foreman, Alnmouth, 1937; Acting Assistant District Locomotive Superintendent, York, 1937-38; Head of General Section, Locomotive Running Superintendent's Office, York, 1938-39; Assistant District Locomotive Superintendent, Sunderland, 1939; Acting Assistant District Superintendent, Darlington, 1939-42; Acting Technical Assistant to Locomotive Running Superintendent, York, 1942-43; and Acting Assistant Locomotive Running Superintendent, Edinburgh, 1943-45.

Mr. Justo C. Lavandera, who, as recorded in our November 23 issue, has been appointed Commercial Assistant to the General Manager, Buenos Ayres & Pacific Railway, was born in Buenos Aires in June, 1871. In 1886 he joined the old Northern Railway (Argentina) and served as a telegraph clerk, clerk in the Goods Office, and cashier of the Goods Section in

**Mr. R. J. Horsley**Assistant to the Chief Accountant,  
G.W.R., 1936-45**Mr. A. W. Tait**Appointed Assistant to the Chief Accountant,  
G.W.R.**Mr. W. H. Anglesey**Appointed Audit Accountant,  
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## THE RAILWAY GAZETTE

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the Traffic Department. In 1892 he joined the Accountant's Department of the Buenos Ayres & Pacific Railway. When the Tariffs Section was created, in the Traffic Department, in 1902, he was appointed in charge. In October, 1912, the company decided that all tariff matters should be dealt with in the management, and Mr. Lavandera was transferred thereto, and, in addition to his former duties, took charge of all matters of a commercial nature. He was entrusted with the unification of the tariffs of the Buenos Ayres & Pacific, Argentine Great Western and Villa Maria & Rufino Railways. Between 1911 and 1928 he represented the B.A.P.R. on the Tariffs Committee of the Railway Clearing House, and when the Tariffs Advisory Committee was created he was appointed the representative of the company. Mr. Lavandera was also a member of the Joint Committee of the Argentine and Chilean Transandine Railways.

Mr. R. J. Horsley, Assistant to the Chief Accountant, Great Western Railway, who has retired, entered the company's service in the Audit Office in 1899, and, after a year in the Goods Department of that office, was transferred to the Parcels Department, where he remained until appointed to take charge of the Coaching Side of the Statistical Department on its formation in 1911. In November, 1916, he joined the Railway Transport Establishment and served in France from January 1, 1917, until July, 1919. After being demobilised, he was lent to the Accountant's Standing Committee at Great George Street, Westminster, until the "Appointed Day" (August 16, 1921), when he returned to the Audit Section of the Chief Accountant's Office in the Agreements Department, of which he was appointed Assistant in April, 1923, and Head of the Department in November, 1926. On the retirement of Mr. T. B. Cox in May, 1936, Mr. Horsley was appointed Assistant to the Chief Accountant. During his career Mr. Horsley has been associated closely with many important measures, the most important of which were the L.M.S.R.-L.N.E.R., G.W.R.-L.M.S.R., G.W.R.-S.R. and London Passenger Transport Pools.

Mr. W. H. Anglesey, Assistant to the Chief Accountant, Great Western Railway, who, as recorded in our October 5 issue, has been appointed Audit Accountant on the staff of the Chief Accountant, entered the company's service in the Audit Office in 1902. After gaining experience in the Passenger, Parcels, and Goods Sections of that department he was appointed Head of the Parcels Section in October, 1929, and in January, 1933, took charge of the Goods Section. In April, 1939, he was appointed Assistant to the Chief Accountant. Mr. Anglesey served with the Army overseas from January, 1917, to January, 1919.

Mr. A. W. Tait, who, as recorded in our October 5 issue, has been appointed Assistant to the Chief Accountant, Great Western Railway, entered the service of that company in 1926 in the Chief Accountant's Office. He had experience in various sections of the office and on the personal staff of the Chief Accountant. In 1937 he was selected for a year's course of special training in the accounting procedures of the Traffic, Engineering and Locomotive Departments. In 1938 he was appointed Personal Clerk to the Chief Accountant; and in January, 1940, Assistant Secretary of the R.E.C. Accountants' Committee. During the war years Mr. Tait has been engaged in assisting with the secretarial work involved in the financial arrangements

during control affecting all companies which have been operated through the various committees of accountants of the parties concerned and the Ministry of War Transport. He is a member of the Association of Certified & Corporate Accountants.

## L.N.E.R. APPOINTMENTS

Mr. M. G. Maycock, Assistant to Engineer (Maintenance), York, to be Assistant Engineer, Edinburgh, in succession to Mr. J. I. G. MacGregor, retired.

The appointment of Mr. E. A. J. Bilham, who has been occupying the post of District Engineer, Leeds, in an acting capacity, has been confirmed on a permanent basis.

Mr. B. Adkinson, District Locomotive Superintendent, Gorton, has been appointed District Locomotive Superintendent, Doncaster, in succession to Mr. G. Oakes, retired.

Mr. B. X. Jessop, who, while serving with H.M. Forces, was appointed Assistant Passenger Manager (North Eastern Area), has returned to the company's service and taken up the duties of his new post at York.

Mr. S. A. Finniss, who, in his absence with H.M. Forces, was appointed District Superintendent, Sunderland, has returned to the company's service and taken up the duties of that position.

In consequence of the retirement of Mr. F. H. Eggleshaw, Mr. J. C. Spark, Works Manager, Cowslairs, to be Locomotive Works Manager, Doncaster.

Mr. J. N. Bull, Acting Assistant Locomotive Works Manager, Doncaster, to be Works Manager, Cowslairs.

The appointment of Mr. E. W. Rostern, who has been occupying the post of Superintendent (Southern Area) in an acting capacity, has been confirmed on a permanent basis.

Mr. J. E. M. Payne, Assistant to Marine Superintendent Engineer, to be Marine Superintendent Engineer, Parkstone Quay, in succession to Mr. R. C. Banks, retired.

Mr. H. R. Garth, Assistant to Engineer (Construction), York, to be Assistant Engineer (York).

Mr. W. P. Allen, who has been acting as District Superintendent, Darlington, to be District Goods Manager, Newcastle, in succession to Mr. H. F. Sanderson.

Mr. L. W. Ibbotson, Trains Assistant to Superintendent & Locomotive Running Superintendent (North Eastern Area), to be Acting District Superintendent, Darlington.

Mr. J. D. Horgan, who has been Acting District Goods & Dock Manager, Middlesbrough, to be District Goods Manager, Middlesbrough, on a permanent basis.

## G.W.R. APPOINTMENTS

Mr. A. Lane, Assistant Chief of Police, Paddington, to be Chief of Police, Paddington, on the retirement of Mr. G. Stephens on December 31, 1945.

Mr. H. W. Howard, Assistant District Goods Manager, Bristol, to be Goods Agent, South Lambeth.

Mr. A. Higginson, Goods Agent, Birkenhead, to be Assistant District Goods Manager, Bristol.

Mr. E. Havers, Chief Clerk, District Goods Manager's Office, Birmingham, to be Goods Agent, Birkenhead.

Mr. G. A. V. Phillips, Temporary Assistant District Goods Manager, London, to be Goods Agent, Smithfield.

Mr. S. R. Ager, Chief Clerk (Road Transport Control), Chief Goods Manager's Office, Paddington, to be Assistant to Road Transport Controller, Chief Goods Manager's Office, Paddington.

Mr. F. D. M. Ryves, Senior Surveyor and Draughtsman, Chief Engineer's Office, Paddington, to be Resident Engineer, Chief Engineer's Office, Paddington.

Mr. W. D. G. Woodcock, Leading Draughtsman, Architect's Office, Paddington, to be Assistant, Architect's Office, Paddington.

## Investiture of Mr. Leslie Ford



His Majesty the King investing Mr. Leslie Ford, Chief Docks Manager, Great Western Railway, with the O.B.E. in the City Hall, Cardiff, on November 14.

November 30, 1945

## Staff and Labour Matters

### International Industrial Committees —Inland Transport

At its 94th session held in London in January, 1945, the governing body of the International Labour Office decided to set up a number of international committees to deal with conditions in the following industries:—

Inland transport; textiles; coal mining; iron and steel production; metal trades; petroleum production and refining; building, civil engineering and public works.

The committees will be composed of representatives of governments, employers, and workers from countries in which the industries in question play an important part. On the Inland Transport Committee there will be two Government representatives, two employers' representatives and two workers' representatives from each of the 24 countries represented on the Committee.

The employers' and workers' members of the committees will be appointed by the Government in agreement with the organisations of employers and workers having a substantial membership in the industries concerned.

To give each committee a basis on which to begin, the governing body to the International Labour Office decided that the agenda for the first meeting should include the following two items:—

(a) The social problems of the industry during the period of transition from war to peace;

(b) Future international co-operation concerning social policy and its economic foundations in the industry.

It is proposed to hold the first meeting of the Inland Transport Committee in London on December 13.

### Dock Workers Wages

With the return to work on November 5 of the 43,000 dock workers who had been striking, negotiations on the union's claim for improvements in rates of pay, reduction in hours of work and improvements in conditions of service were resumed by the National Joint Council for the Industry on November 6.

Before the resumption of work, mass meetings of the strikers in all the affected ports carried a resolution on November 2 as follows:—

(1) This national strike committee resolves that we resume work on Monday, November 5, at 8 a.m. in an organised fashion and allow negotiations to proceed on behalf of port workers.

(2) We resume work on 30 days' notice on the clear understanding that if no satisfactory and reasonable answers to our demands are reached, we pledge ourselves to resume the strike, which will be intensified with every means at our disposal, including ports which have not already been involved in the dispute.

(3) To ensure that satisfactory progress is made during this period we expect that: (a) the employers will implement their promise to resume negotiations within 24 hours of a resumption of work; (b) the employers will refrain from any victimisation; (c) the union will resume negotiations for a settlement in the industry in accordance with their published proposals immediately; (d) the union will break off negotiations if within the 30-day period it becomes clear that it is impossible to reach any such settlement; (e) the Government will put in motion at once the necessary machinery for setting up a judicial inquiry into the industry, including the causes of the present dispute.

(4) Appeals to all port workers returning to work to do all in their power to relieve congestion at the ports.

(5) We hereby proclaim the solidarity, courage, and discipline as shown by our fellow workers and the undoubted faith in their leadership during this dispute.

(6) That any award be made retrospective from September 27, 1945.

This resolution was sent to the Government and to remove any possibility of misunderstanding the Ministry of Labour issued the following statement on November 2:—

"The Minister's attention has been drawn to statements that the resumption of work on Monday next is subject to certain conditions and that a copy of these conditions has been conveyed to him by Mrs. Braddock, M.P., in a letter from the unofficial strike committee. The Minister is anxious that the men concerned, should not be misled into thinking that these conditions have been considered by the Government. The position remains as set out in Mr. Isaacs's statement to the House of Commons last Tuesday.

The statement added that the communication from the unofficial strike committee was not in fact accepted by Mr. Isaacs, who, in a letter which he had given to Mrs. Braddock, confirmed the statement he made to her "that it would be contrary to Government policy to accept any representations on this matter save through the normal trade union channels.

I have made this position clear in my statement in the House of Commons, and I feel that it is of the utmost importance to industry and to the trade union movement generally that the principle involved should be fully maintained."

On November 9 the Executive Council of the Transport & General Workers' Union considered the stoppage in the industry. Mr. Deakin, General Secretary of the union issued the following statement:—

"The general executive council of the Transport & General Workers' Union today gave very careful consideration to the report of the recent stoppage in the dock industry. The council, after a full examination of the position, endorsed the decision and policy of the national docks delegate conference and the national docks group committee and pledges itself to support the prosecution of the dockers' claims, using the machinery of the union in a constitutional manner to deal with, and dispose of, the problem in all its aspects.

The council is deeply appreciative of the loyalty of the men to their union and asks them to use their branches and the machinery of the union for the purpose of carrying out their business and expressing their views. It must be clearly understood that the only authority that can determine policy within the union is the general executive council, which is fully alive to its responsibility and will at all times give full consideration to the views of the membership expressed through the union machinery."

A renewed attempt was made to reach agreement on the dockers' claim when the Negotiating Committee of the Joint Industrial Council resumed their discussions with the Ministry of Labour officials on Monday, November 12. The meeting was continued on Tuesday, November 13, without reaching agreement and the personal intervention of Mr. Isaacs, the Minister of Labour, was asked for by both sides in a renewed effort to prevent a breakdown. Mr. Isaacs again met both sides of the Industry on November 15 and in the afternoon it was announced that the Negotiating Committee of the National Joint Council was able to resume negotiations.

### Electricians' Wages

Electricians are to have an increase in their wages of 2d. an hour from the first pay day in December. This decision has been arrived at by the National Joint Industrial Council, which had before it a claim by the Electrical Trades Union for a review of existing wages paid to electricians, and application for a review of the existing wages structure of the industry.

The Council states that pending further

consideration of the application for a review of the wages structure of the industry, and in view of the prevailing economic conditions, the National Federated Electrical Association agreed that a temporary increase of 2d. an hour to be added to the temporary addition of one penny an hour at present being paid. The new rates will be as follow:—

#### Grade "A"

Basic rate, 1s. 11½d.; cost of living war addition (including temporary addition), 8½d.; inclusive hourly rate, 2s. 7½d.

#### Merseyside District

Basic rate, 1s. 9d.; cost of living war addition, 8½d.; inclusive hourly rate, 2s. 5½d.

#### Grade "B"

Basic rate, 1s. 8½d.; cost of living war addition, 8½d.; inclusive hourly rate, 2s. 4½d.

#### Grade "C"

Basic rate, 1s. 7½d.; cost of living war addition, 8½d.; inclusive hourly rate, 2s. 3½d.

The National Federated Electrical Association, announcing the Joint Industrial Council's decision, states that the agreed minute of the council included the following:—

"The employers having stated, as a result of their experience, that the productive output of their workpeople has fallen, the council recognises the impracticability of carrying out an investigation with the object of establishing provable facts as to output. The council subscribes to the principle that in return for a fair wage paid by the employer, it is incumbent on the worker to give his maximum skill and service to the industry. This is the accepted obligation of the industry to the public which it serves. In consideration thereof the Electrical Trades Union undertakes to urge its members to respond to the urgent necessity of increasing output."

## Questions in Parliament

### Train Delays

Viscount Hinchingbrooke (Dorset, South—C.) on November 19 asked the Minister of War Transport whether he was aware that many trains arrived up to two hours later than their scheduled times in spite of clear weather; and what steps were being taken consistent with safety to improve time-keeping.

Mr. Alfred Barnes: During the four weeks ended November 11, 62 long-distance trains out of a total of nearly 30,000 arrived at London termini 2 hours or more late. The late arrival of 21 of the 62 trains was due directly or indirectly to mishaps and three were delayed awaiting overseas leave parties. Every effort is being made by the railway companies to maintain the punctuality of trains, and it is expected that the general time-keeping will gradually improve as more labour and rolling stock becomes available.

Mr. E. Walkden (Doncaster—Lab.): Is not the Minister aware that when you go on the up journey to Doncaster trains are on time, but between Doncaster and Kings Cross they lose an hour every day, and can he explain why that is so?

Mr. Barnes: Perhaps Mr. Walkden will put that question down.

Mr. John Lewis (Bolton—Lab.): Is the Minister aware that the 9.45 train from Manchester this morning was held outside Euston for half an hour, and is there any reason for that?

Colonel Oliver Stanley (Bristol West—C.): Can the Minister say whether the government controls the railways of this country?

Mr. Barnes: As a matter of fact, as Colonel Stanley is aware, the ordinary railway administration is not affected at the present moment. Perhaps in the near future it may be.

Captain T. F. Peart (Workington—Lab.): on November 19 asked the Minister of War

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Transport if he was aware of the inconvenience caused to West Cumberland workers returning on the 6.18 p.m. train from Carlisle, by the railway company's practice of attaching vans for shunting at intermediate stations, thus creating considerable delay in their arrival home; and what steps he was prepared to take.

Mr. Alfred Barnes: I am informed that the daily average delay in the arrival of this train at Whitehaven between October 22 and November 14 was 13 minutes, of which 4 minutes was due to the need to attach a van for Naval purposes at Workington. The attachment of this van was discontinued as from Monday, November 12, and I am informed that, apart from horse-boxes which are attached to the train on monthly sale days, vans are now attached to the train only on rare occasions. The situation will be further reviewed.

Lieutenant T. C. Skeffington-Lodge (Bedford—Lab.) on November 19 asked the Minister of War Transport whether he was aware of the inadequacy, unpunctuality and slowness of the train service between London, St. Pancras, and Bedford, Midland Road; and whether, due to the fact that previous representations to the L.M.S.R. had had little effect, he would take steps to see that a real improvement was brought about at the earliest possible moment.

Mr. Alfred Barnes: I am making inquiries and will communicate with Lieutenant Skeffington-Lodge as soon as possible.

#### One-Class Travel

Mr. G. H. R. Rogers (North Kensington—Lab.) on November 19 asked the Minister of War Transport if he would introduce one-class travel on the railways.

Mr. Alfred Barnes: No, I do not feel that I should be justified in doing so.

#### Leeds-Bridlington Railway Service

Mr. G. Wadsworth (Buckrose—Lib.) on November 19 asked the Minister of War Transport if he would state the number of passenger trains running between Bridlington and Leeds, and Leeds and Bridlington; and would he consider improving the service to assist commercial travellers and business men and women who resided in and about Bridlington and work in Leeds.

Mr. Alfred Barnes in a written answer stated: From Bridlington to Leeds there are no through trains, but there are 12 services on Saturdays and 10 on other weekdays which involve a change *en route*. From Leeds to Bridlington, in addition to one through train, there are 10 services on Saturdays and 9 on other weekdays which involve a change *en route*. I am advised that the railway company is satisfied that the traffic does not warrant the provision of additional through trains or other services in present circumstances.

#### Seat Reservations

Mr. E. Carson (Isle of Thanet—C.) on November 19 asked the Minister of War Transport if he was aware that seven compartments on the 9.30 a.m. train from Kings Cross to Glasgow on November 9, had been reserved for members of the London Orchestra; that only half had been occupied; and whether he was now in a position to extend reservations of seats on trains to Members of Parliament travelling to and from their constituencies.

Mr. Alfred Barnes in a written answer stated: The railways are authorised to reserve accommodation for theatrical parties numerous enough to fill at least one compartment, on condition that the labels are removed when they have taken their seats so that any unoccupied seats may be taken by other passengers. The reservations to which Mr. Carson refers were made in accordance with this authorisation. There

were 90 first class and 304 third class seats on the train, but there were only 49 first class and 295 third class passengers. As regards reservations of seats for Members of Parliament, I would refer Mr. Carson to my answer to a question by Mr. W. Stamford (Leeds West—Lab.) on October 29.

#### Reservation of Seats for German Prisoners

Mr. H. V. A. Raikes (Liverpool, Wavertree—C.) on November 13 asked the Secretary of State for War whether he would terminate the practice of reservation of seating accommodation for German prisoners of war on British railways at the expense of the travelling public.

Mr. J. J. Lawson (Secretary of State for War) stated in a written answer: The practice has already ceased except for parties of 20 men or more, where it is necessary for the exercise of proper control and in the interests of the general public. An exception is made in the case of certain German officers of very high rank, where special precautions are necessary.

#### Special Trains for Fish Traffic

Mr. R. J. G. Boothby (East Aberdeen—C.) on November 12 asked the Minister of War Transport whether he was aware that the existing transport facilities at Yarmouth, both by rail and road, were quite inadequate for the expeditious handling of the herring now being landed there; and, in view of the loss of valuable food caused by this, whether he would take immediate steps to improve these facilities during the remainder of the season.

Mr. Alfred Barnes: I cannot agree that the transport facilities for herring at Yarmouth are inadequate. The full pre-war service of special trains for fish traffic has been restored and, except for one occasion when the catch was exceptionally heavy, I am not aware of any recent case when the day's catch has not been disposed of on the same day. The road transport available has been in excess of requirements.

Mr. Boothby: Is the Minister aware that as there are only about 100 boats operating when normally there are 700, the catch can hardly be excessively heavy? If I send him further particulars will he look into them?

Mr. Barnes: That is hardly the point. The point is whether the facilities are there, and I am assured they are. However, I will be glad to look into the question again.

#### Railway Coaches

Mr. A. C. M. Spearman (Scarborough & Whitby—C.) on November 12 asked the Minister of War Transport what was the number of passenger-carrying vehicles actually available to the railways for useful work at the present time compared with the figure at the outbreak of war; and what steps were being taken to increase the stock for next season's holiday traffic.

Mr. Alfred Barnes (Minister of War Transport): The number of passenger-carrying vehicles actually available to the railways for useful work is 35,513, which is 4,869 less than at the outbreak of war. Steps have been taken to bring back from the Continent British railway stock lent for military purposes and to construct new vehicles.

#### Railway Wagons

Mr. A. C. M. Spearman (Scarborough & Whitby—C.) on November 12 asked the Minister of War Transport if he was aware that about 160,000 railway wagons were now out of service for repair in this country, which was over 100,000 more than was the normal number at this time of the year; whether he was taking steps to increase the repair staffs; and what the prospects were in getting the number of wagons under

repair to normal before the winter coal demands arose.

Mr. Alfred Barnes: I am aware that the wagon position is serious. Special steps have been taken to obtain additional labour and facilities for repairs, to increase the number of wagons to meet traffic demands during the coming winter.

Mr. Spearman: Does the Minister realise that the failure to release key men is causing a serious bottleneck, and has he made representations to the Minister of Labour with a view to expediting demobilisation?

Mr. Barnes: Yes, and it has received very sympathetic consideration, but I feel that we shall best solve this problem by bringing into operation additional repair and production facilities.

Mr. Spearman: Can the Minister state how many have been released as a result of his representations to the Minister of Labour?

Mr. Barnes: If Mr. Spearman will put that question down I will endeavour to give him the information he requires.

Viscount Hinchingbrooke (Dorset, Southern—C.): What proportion of the number of wagons sent to the Continent after D-Day has been returned?

Mr. Barnes: I cannot give that information off-hand, but steps are being taken to secure the return of certain rolling stock sent to the Continent.

#### Haifa-Beirut-Tripoli Railway

Mr. R. R. Stokes (Ipswich—Lab.) on November 19 asked the Secretary of State for Foreign Affairs what were the terms of the agreement reached with the French concerning the operation of, or disposal of, the Haifa-Beirut-Tripoli Railway; and whether the Lebanese Government had been consulted beforehand.

Mr. P. J. Noel-Baker (Minister of State), replying for Mr. Ernest Bevin (Secretary of State for Foreign Affairs): The British and French representatives in the Lebanon recently communicated to the Lebanese Government the draft of a tripartite agreement about the Lebanese section of the Haifa-Tripoli railway. If this draft agreement is accepted, His Majesty's Government in the United Kingdom will grant an option to purchase the Lebanese section of the railway to a French or Lebanese company designated jointly by the principal French representatives in the Lebanon and the Lebanese Government. I hope that the views of the Lebanese Government will shortly be received.

Mr. Stokes: Does the Minister's answer mean that the Lebanese Government was not consulted before the agreement was made, and that it was a bilateral one?

Mr. Noel-Baker: My answer plainly states that the Lebanese Government was consulted before the agreement was made.

Mr. Stokes: Oh, no, that is not my question. The question I put on the paper is whether the Lebanese Government was consulted before the agreement was made between the British and the French, and clearly the answer shows that it was not, and that is the trouble.

Mr. Noel-Baker: The agreement was made a long time ago.

#### Road, Rail, and Air Transport in the Highlands

Mr. Henderson Stewart (East Fife—Lib. Nat.) on November 13 asked the Secretary of State for Scotland what consultations had taken place between the Hydro-Electric Board and the various departments of the State concerning development of road, rail, and air transport, water supplies, housing and health services, tourist trade, and local government responsibilities in the Highlands before the

Tummel-Garry scheme was finally submitted to, and approved, by him.

Mr. G. Buchanan (Joint Under-Secretary of State for Scotland) wrote in reply: All the schemes submitted by the board for the generation and distribution of electricity have been the subject of careful consideration, before confirmation, by the Secretary of State for Scotland, in accordance with his statutory duties under the Hydro-Electric Development (Scotland) Act, 1943, and as Planning Minister for Scotland. In so doing he has consulted with all the appropriate Ministers concerned.

#### Railway Air Services

Commander Christopher Shawcross (Widnes—Lab.) on October 24 asked the Parliamentary Secretary to the Ministry of Civil Aviation, whether he would take steps to secure that the fares charged by the Railway Air Services bore a reasonable relation to the fares charged for first class rail travel over the same routes and distances.

Mr. Ivor Thomas (Parliamentary Secretary to the Ministry of Civil Aviation) stated in a written answer: If subsidies for internal airlines are to be avoided, fares must be governed by the costs of operation, and not by the fares charged for rail travel. When post-war routes are fully organised and more suitable aircraft become available, the cost of operation per passenger-mile will come down and enable lower fares to be charged.

#### Severn Bridge

Mr. Evelyn Walkden (Doncaster—Lab.) on November 19 asked the Minister of War Transport whether he would consider providing space or width in the proposed Severn Road Bridge which would allow for the future construction or development of a double-track railway line similar to the Dutch roadway across the northern end of the Zuyder Zee.

Mr. Alfred Barnes (Minister of War Transport): The embankment across the northern end of the Zuyder Zee is not comparable with a bridge across the Severn, but I will have consideration given again to the question whether it is practicable to construct the latter to accommodate a railway.

Mr. Walkden: Will the Minister bear in mind that the Dutch did face the future, although they did not need a railway immediately. They left provision for a railway, and that is what I am asking him to do, to face the future.

Mr. Barnes: We shall face all contingencies, and with success.

**COST-OF-LIVING INDEX.**—At November 1 the official cost-of-living index figure was 103 points above the level of July, 1914, showing no change as compared with a month earlier. At November 1, 1938, it was 56 points, and at November 1, 1939, 69 points, above July, 1914.

**L.N.E.R. NEW TYPE OF TRAIN INDICATOR.**—A new type of train arrival and departure indicator is being installed at Kings Cross Station. Two panels will be provided, one of which will display weekday services and the other Sunday and additional services. The indicators will be worked mechanically in the first instance, but they are designed for conversion to electric operation by the addition of a fractional h.p. motor. The motor, when installed, will be controlled by press button or automatically by a time clock.

#### THE RAILWAY GAZETTE

## An Administrative Staff College

For more than three years a group of industrialists and others has been studying a plan to found an Administrative Staff College. Members of the Government and representative leaders in industry, commerce, the fighting services, the civil defence, local government and universities, have been consulted, and members of the group have prepared a pamphlet which gives an indication of their views and proposals. In this it is stated that the plan which is being adopted does not attempt to compete with the public courses in administration which have been developed in London, Manchester, and elsewhere, and still less does it render superfluous the proper grounding of a potential executive in the technique and problems peculiar to his own field. The basis underlying the proposal may be summarised as follows:—

(a) Industrial and commercial enterprise as well as the activities of Government, both central and local, are daily becoming more widespread and more complex. This calls for devolution of duties and acceptance of responsibility by an increasing number of those in executive positions.

(b) The recent changes in the spheres of business and of Government also demand a closer appreciation of the outlook and problems of others both within and between private enterprise and the public service.

(c) There are certain fundamental principles of organisation and administration which are common even to quite different types of activity. These principles can and should be taught, but today they are laboriously and inadequately acquired individually by a process of trial and error.

(d) Far better results can be obtained if these principles are expounded to those who already have acquired some relevant experience.

(e) Holders of responsible positions are drawn from all sorts of persons—from those who have received the highest academic education and those whose education has been severely practical; from technicians transferred to administrative functions and those who started on the administrative side.

The aims of the college will be:

(a) To investigate and explain the principles and technique of organisation, administration and leadership in civil life;

(b) By "cross-fertilising" young administrators from all walks of national life at an age when their views are formed but not fixed, to provide for the exchange of ideas to mutual advantage and to promote a better understanding between those in charge in different spheres of activity.

Under (a), the problems which will be studied are, for example, the principles underlying the structure of organisations; the problems of personnel management common to most large-scale enterprises; the application of statistical methods to practical problems; the uses and limitations of public relations work, and methods of measurement of public opinion. The aim will not be to produce personnel-managers, statisticians or public relations officers; but to assist the student to understand what such specialists can and cannot do.

There are also certain aspects of administration and leadership which are to-day somewhat undervalued and neglected. Of these, one of the most obvious is the preoccupation of some senior officials and executives with questions of policy and execution, to the virtual exclusion from their direct concern of personnel questions. It is increasingly important that a departmental chief should devote more personal attention to selecting his chief assistants and

less to doing their work for them, and that he should give as much care to the organisation and morale of his department as to the taking of wise decisions on issues of policy.

Under (b), the second of the principal aims of the college will be achieved informally by the mixing of types and the pooling of experience.

The staple method of working will be in syndicates of a dozen or less. Formal instruction will be supplemented by practical exercises. Regular visits will be made to undertakings of many different types.

The college will not be run for profit. Running expenses will be met by fees, but some support may prove necessary from endowment income or guaranteed subscriptions. The capital will be covered by subscription. The control of finance will be vested in the Court of Governors. The course is designed to last about three months, and fees will work out at about £100, covering living expenses and tuition.

The project is sponsored by Lord Woolton. Mr. Geoffrey Heyworth, Chairman of Lever Brothers & Unilever Limited, is Chairman of the Court of Governors, which comprises Mr. Robert H. Adcock, C.B.E., Clerk of the Lancashire County Council, Sir Hugh Chance, Deputy Chairman, Chance Brothers Limited, Birmingham, the Rev. H. G. Michael Clarke, Rector of Holy Trinity, St. Marylebone, N.W.I, formerly Headmaster of Rossall and Repton, Lady Megan Lloyd George, M.P., Mr. George Gibson, formerly Chairman, Trade Union Congress, and Vice-Chairman, National Savings Committee, Sir Hector J. W. Hetherington, Principal and Vice-Chancellor, Glasgow University, Lord Latham, Leader of the London County Council, and Chairman, Singer Motors Limited, Coventry, Mr. H. C. B. Mynors, Bank of England, Mr. Charles G. Renold, Chairman, Renold & Coventry Chain Co. Ltd., Manchester, Mr. John Rodgers, Director, J. Walter Thompson Co. Ltd., Chairman, British Market Research Bureau Limited, Sir Eric Salmon, M.C., Clerk of the London County Council, Mr. Harry L. Sainston, Chairman, Textile & General Supplies Limited, Leicester. Each of the foregoing is acting in his private capacity.

**RESTORATION OF L.N.E.R. HARWICH-HOOKE SERVICE.**—In connection with the restoration of the L.N.E.R. Harwich-Hook of Holland steamship services, to which reference was made in our November 23 issue, the following telegrams recently were exchanged between Sir Ronald Matthews, Chairman of the company, and Her Majesty the Queen of the Netherlands:

"The Chairman and the board of directors of the London & North Eastern Railway Company tender their respectful greetings to Your Majesty on the occasion of the restoration of the Harwich-Hook of Holland steamship service. May this re-established link contribute towards the speedy revival of trade between the United Kingdom and the Netherlands and help to maintain and strengthen the bonds of friendship which have for so long existed between your indomitable nation and the people of Britain."

SIR RONALD MATTHEWS, Chairman."

"Sir Ronald Matthews, Chairman, London & North Eastern Railway, London. The Queen commands me to thank you most sincerely for your telegram on the occasion of the restoration of the Harwich-Hook of Holland steamship service. She fully shares the hope expressed by the board of directors that the re-established link will contribute to a speedy revival of trade between the Netherlands and Great Britain and further strengthen the old bond of friendship existing between them."

VAN TETS VAN GOUDRIAAN."

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## The Swedish State Railways in 1944

The working receipts of the Swedish State Railways for 1944 totalled kr. 561,000,000 against kr. 547,000,000 in 1943. There was a decline, however, in the net profit. The working receipts for 1944 were considerably more than double the amount attained in 1938. Passenger traffic, as expressed in passenger-kilometres, rose from 2,330,000,000 in 1938 to 5,160,000,000 in 1944. The increase in goods traffic was even more spectacular, rising from 2,060,000,000 tonnes-kilometres to 5,700,000,000 tonnes-kilometres (exclusive of the Lapland ore traffic). In addition to increased traffic the expansion in the working receipts has been due partly to a 10 per cent. increase in passenger fares and goods rates, introduced in 1940. The volume of traffic expanded because of the virtual elimination of road-motor services and coastal shipping during the war, and because of the intensified defence traffic, and developments in the carriage of fire-wood and cellulose. These circumstances made themselves felt to a lesser degree in 1944. The volume of passenger traffic was still increasing slightly in 1944, although at a slower rate than in the preceding war years, but no increase was recorded in goods traffic, mainly as a result of the stoppage of the Lapland iron-ore exports and the discontinuation of shipping in the Baltic.

On the other hand, expenditure was still on the up-grade. It amounted to kr. 453,000,000 in 1944, against kr. 415,000,000 in 1943, more than double the 1938 figure of kr. 204,800,000. For 1945, expenditure is estimated at kr. 467,000,000.

The working surplus for 1944 contracted to kr. 108,000,000 compared with the record of kr. 132,000,000 attained in 1943. For 1945, further drop to kr. 75,000,000 is expected, as the working receipts for the current year are estimated at kr. 542,000,000 only, or more than 3 per cent. lower than the figure attained in 1944. This comprises kr. 220,000,000 in respect of passenger traffic, a slight increase compared with kr. 219,000,000 in 1944. Goods traffic receipts were kr. 305,000,000 (including the Lapland ore traffic) against kr. 325,000,000 in 1944. A further substantial decline is expected for the 1945/1946 working year with a surplus of kr. 60,000,000 only, or 20 per cent. less than for 1944/1945. As kr. 39,000,000 has to be deducted from the working surplus in respect of the 3·8 per cent. interest on the interest-bearing part of the invested capital (which latter totals kr. 1,100,000,000), the net profit of the State Railways is correspondingly lower; thus it was kr. 93,000,000 for 1943, kr. 69,000,000 for 1944, and will be as low as kr. 36,000,000 for the current year. This, however, still compares favourably with the 1938 net profit of kr. 12,900,000.

The ability of the Swedish State Railways to deal successfully with the considerably increased traffic, despite all the heavy handicaps resulting from the war, results mainly from electrification, reference to which was made in *The Railway Gazette* on March 30, and August 17, 1945. It has been stated officially that without the electrification the State Railways would not have been able to meet the requirements of the heavy defence traffic nor of the supply services during the war years with that success which has actually been achieved.

This favourable result explains the vigour with which the electrification is being carried on. For the coming working year, kr. 16,300,000 has been allocated to the continuation of the conversion of the line

from Östersund to Storlien, the Swedish frontier station on the main line for Trondheim, as well as from Stockholm to Köping (via Enköping and Västerås, to the west of the capital), and preliminary steps have been taken for the electrification of other sections of lines. In addition, kr. 8,300,000 has been allocated in the new budget for the acquisition of ten battery shunting locomotives, some ten traction locomotives, 35 to 40 motor coaches and 15 to 20 trailers.

## Notes and News

**Petrol Price Reduced.**—Petrol was reduced in price by a halfpenny a gal. on November 22, making the price 1s. 1d. a gal.

**Electric Traction Engineer Required.**—An electric traction engineer is required by a firm of consulting engineers in London. See Official Notices on page 579.

**Cawnpore-Khairabad Line to be Re-opened.**—The Great Indian Peninsula Railway is to re-open the Cawnpore-Khairabad (Banda) Line, it was stated by Lt.-Colonel R. B. Emerson, General Manager of the G.I.P.R., on October 26. The line was dismantled a few years ago as a war measure.

**L.N.W.R. Provident Society.**—The forty-sixth ordinary annual meeting of the contributing members of the London & North Western Railway Provident Society for providing pensions for widows and orphans of the salaried staff will be held at Euston Station, N.W.1, on December 5.

**Additional L.N.E.R. Train Services.**—Additions to the L.N.E.R. train services are being made during the month of November. Of these the most important is the reinstatement, from November 14, on Mondays, Wednesdays, and Fridays, of the "Hook Continental" express, which leaves Liverpool Street at 8 p.m., and is allowed 100 min. instead of the pre-war 87 min. to Parkstone Quay. The return journey from Parkstone is on Wednesday and Friday mornings at 7.15 a.m., and Sunday mornings at 7.35 a.m., with an allowance of 105 and 100 min. respectively from Parkstone Quay to Liverpool Street. Restaurant car trains are provided in both directions. As a contingent alteration, the 7.30 p.m. train from Liverpool Street starts at 7.20 p.m., and omits the stop at Marks Tey; this train, further, is extended to Norwich, calling at Stowmarket, Diss, and Tivetshall, and arriving at 10.46 p.m. Also the 8 p.m. from Liverpool Street to Yarmouth starts at 8.5 p.m., and calls additionally at Marks Tey. The 3.40 p.m. express from Liverpool Street to Norwich via Ipswich now runs through to Cromer, calling only at North Walsham and arriving at 7.20 p.m.; this provides a service to Cromer 55 min. faster than by any other train. A new express runs at 10.20 p.m. from Peterborough to Wisbech, Sutton Bridge, and Kings Lynn, arriving at 11.33 p.m., in connection with the 8.20 p.m. from Kings Cross; a balance working is provided at 12.55 p.m. from Kings Lynn to Peterborough, calling at all stations and arriving at 2.43 p.m. In Scotland an express is provided at 12.10 p.m. from Edinburgh Waverley to Galashiels, Melrose, St. Boswells, Hawick, and Carlisle,

arriving at 2.57 p.m. (this began to run on October 1).

**L.M.S.R. and S.R. Train Mishaps in Fog.**—On November 22, the L.M.S.R. lines between Chester and the North Wales coast were blocked when the 7 a.m. passenger train from Chester to Llandudno at Mold Junction ran into the back of a goods train carrying some ammunition wagons. The locomotive of the passenger train overturned and several wagons of the goods train were derailed. In the evening of the same day a Southern electric train of four empty coaches ran into a stationary train in Staines Station; visibility was poor at the time, but little damage was done to either of these trains and traffic was not delayed.

**Naming of Southern Railway "Merchant Navy" Class Locomotives.**—The naming ceremony of Southern Railway "Merchant Navy" class engines No. 21C14, *Nederland Line*, and No. 21C15, *Rotterdam Lloyd*, took place at Waterloo Station on November 27, and was performed by Mr. A. F. Bronsing, Managing Director of the *Nederland Line*, and Mr. W. Ruys, Managing Director of *Rotterdam Lloyd*. Among others present were Mr. Lucien Ruys and Mr. J. Olyslager, Directors of the Netherlands Ministry of Shipping, and the Deputy-Chairman (the Earl of Radnor) and the General Manager (Sir Eustace Missenden) of the Southern Railway Company. The engines are the fourth and fifth, respectively, of a further series of mixed-traffic streamline Pacific locomotives of the "Merchant Navy" class, which is being built to the designs of the company's Chief Mechanical Engineer, Mr. O. V. Bulleid.

**Dorman Long Developments.**—A new universal beam mill, the first in this country, and a new steel plant, are to be built on Tees-side by Dorman, Long & Co. Ltd. at a cost of £8,000,000. The installations will occupy a site of 650 acres at the mouth of the River Tees. The mill will produce a broad-flange section hitherto not rolled in Great Britain, and will revolutionise some 75 per cent. of the steel-joist production of this country. The new sections will give greater strength for an equivalent weight of steel, reduce the man-hours required for fabrication, and effect a substantial reduction in the erected cost of steel structures. Designed for an output of 350,000 tons of universal beams a year, the new mill will be based on the latest American methods but will incorporate British practice essential to meet the special requirements of home consumers of structural steel. A large new open-hearth steel plant will also be installed on the site.

**The Worthing Railway Centenary.**—A warm welcome was extended by the Mayor to Lord Radnor (Deputy Chairman, Southern Railway) and the party of Southern Railway officers who visited Worthing on Saturday last, November 24, for the opening ceremony of the Worthing Railway Centenary Exhibition at the Public Art Gallery. This exhibition is remaining open until December 8. At luncheon, before the opening ceremony, Lord Radnor spoke of some of the possibilities of railway nationalisation, and said that it was nevertheless the policy of his company to go ahead with its schemes of electrification as soon as practicable. He feared that, under nationalisation, the same intimate relationships between town and railway as had existed during the past century were unlikely to continue. Mr. R. M. T. Richards (Traffic Manager) Southern Railway), in proposing the toast

of "the Borough of Worthing," referred to the high sunshine record of the town. He said that the railway lost 10 per cent. of its carriage stock during the war, and had been unable to effect renewals. Of the railway staff that had served overseas, 95 per cent. were still there. This combination of rolling stock and staff shortages made train service restoration very difficult at present. The exhibition, which was opened by the Mayor, consists of more than 100 old prints, photographs, models, and newspaper reports, admirably displayed in the Art Gallery.

**Uruguay Northern Railway.**—Gross receipts for year to June 30, amounted to £19,583, against £17,929 for the previous year. Working expenses were £19,128 (£19,920), leaving net receipts of £455 against a loss of £1,891. The deficit, after debenture interest, was £1,818, raising the debt balance to £32,271.

**Glenfield & Kennedy Limited.**—An interim dividend of 5 per cent. (actual), less tax, has been declared. This dividend will also be paid on the shares to be issued to the ordinary shareholders of J. Blakesborough & Sons Ltd., and Alley & MacLellan Limited, under the fusion of interests agreements recently concluded.

**Anglo-Chinese Chamber of Commerce.**—An Anglo-Chinese Chamber of Commerce has been formed in London. Lord Teviot is President, Mr. Tuh-Yueh Lee, Vice-President, and Mr. J. H. Tresfon, Chairman. Among the firms which have become founder-members are the British Oxygen Co. Ltd.; Metropolitan-Vickers Electrical Export Co. Ltd.; Midland Bank Limited; G. D. Peters & Co. Ltd.; Standard Telephones & Cables Limited; and Tube Investments Limited.

**Certificates of Origin Order Revoked.**—Since 1939 all goods imported into the United Kingdom from certain neutral countries have had to be accompanied by a certificate, signed by a British Consular officer, to the effect that no enemy had any interest in such goods, and that not more than 5 per cent. of their cost was due to enemy labour or raw material. The Board of Trade now has issued the Import (Certificates of Origin & Interest) (Revocation)

Order, 1945 (S.R. & O. 1945, No. 1316), which revokes the Import (Certificates of Origin & Interest) Order (S.R. & O. 1939, No. 1505) and amending Orders. The revocation means that importers no longer need produce certificates of origin and interest in respect of goods imported from Liberia, Liechtenstein, Portugal, Spain, Sweden and Switzerland. Copies of the new Order are obtainable, price 1d., from H.M. Stationery Office, Kingsway, W.C.2.

**Associated Equipment Co. Ltd.**—Associated Equipment Co. Ltd. states that the board has recommended a final dividend on the ordinary stock of 12d. per £1 unit of stock, free of tax, making 18d. for the year to September 30, 1945, equal to 15 per cent. for the year, subject to tax. Net profits for the year (subject to final audit) were £218,500, compared with £227,500 last year.

**Canadian Pacific Railway.**—Gross earnings of the Canadian Pacific Railway for September, 1945, were \$26,181,000, a decrease of \$1,450,000 in comparison with September, 1944. Working expenses were \$23,470,000, a reduction of \$470,000 for the corresponding period of 1944, which reduced the decrease in net earnings to \$980,000. Aggregate gross earnings from January 1 to September 30 totalled \$236,680,000, a decrease of \$1,273,000 on last year. Aggregate net earnings for the same period were \$1,978,000.

**Construction of Vehicle Bodies : Letters Patent.**—It is notified in *The London Gazette* of November 13 that, in the matter of letters patent granted to Metropolitan-Cammell Carriage & Wagon & Finance Co. Ltd., and Frederick Homer Rayer, bearing date October 14, 1929, and numbered 336103, for the invention of "Improvements in or relating to the construction of vehicle bodies," on December 18, 1945, an originating summons issued out of the High Court of Justice (Chancery Division), on behalf of Metropolitan-Cammell Carriage & Wagon Co. Ltd. and Weymann's Limited, asking that the terms of the above-mentioned letters patent may be extended for a further period of five years and seven months or such other term as the court shall think fit, will come before

Mr. Justice Uthwatt for directions as to the hearing. Any person desirous of being heard in opposition must lodge, at least eleven days before that date, notice of opposition at the Royal Courts of Justice, London, and serve a copy thereof on Linklaters & Paines, solicitors, and on the solicitor to the Board of Trade.

**Great Western of Brazil Railway Co. Ltd.**—Payment of interest on the permanent 6 per cent. debenture stock and 4 per cent. debentures, will be made on

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## British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices	
			Nov. 27, 1945	Rise/ Fall
<b>G.W.R.</b>				
Cons. Ord. ....	62½	55	55	— 1
5% Con. Pref. ....	122½	114½	106	— 1
5% Red. Pref. (1950) ....	110	104	103	—
5% Rt. Charge ....	135½	128	122½	— 2
5% Cons. Guar. ....	134½	125	118½	— 3½
4% Deb. ....	118½	112	107	— 3½
4½% Deb. ....	118½	114	110½	— 2
4½% Deb. ....	124½	119½	117	—
5% Deb. ....	137	129½	126	—
2½% Deb. ....	77	73½	81½	—
<b>L.M.S.R.</b>				
Ord. ....	34	27½	27	— 1
4% Pref. (1923) ....	64	55	57½	— ½
4% Pref. ....	81	72½	77½	— ½
5% Red. Pref. (1955) ....	105½	102	101½	—
4% Guar. ....	107½	99½	101	— ½
4% Deb. ....	111½	104	103½	— 1½
5% Red. Deb. (1952) ....	111	108	105½	—
<b>L.N.E.R.</b>				
5% Pref. Ord. ....	10½	7½	6½	— ½
Def. Ord. ....	5½	3½	3½	—
4% First Pref. ....	68½	55½	56½	— ½
4% Second Pref. ....	35½	28½	28½	— ½
5% Red. Pref. (1955) ....	101	97½	98	— 3½
4% First Guar. ....	101½	96½	99	— 3
4% Second Guar. ....	95½	88½	93	—
3½% Deb. ....	88½	80½	91	—
4% Deb. ....	110½	103½	102½	— 1½
5% Red. Deb. (1947) ....	105½	101½	101	—
4½% Sinking Fund Red. Deb. ....	107	104½	104½	—
<b>SOUTHERN</b>				
Pref. Ord. ....	80½	71½	73½	— ½
Def. Ord. ....	26½	23	23	— 1
5% Pref. ....	122	113½	105	— 1
5% Red. Pref. (1964) ....	117½	112½	107½	— ½
5% Guar. Pref. ....	134	125½	119½	— 3
5% Red. Guar. Pref. ....	115½	112½	108½	—
4% Deb. ....	118	110	106½	— 3½
5% Deb. ....	135½	127	125	— 1
4% Red. Deb. (1962-67) ....	111½	107½	106½	— 1
4% Red. Deb. (1970-80) ....	112	108½	107½	— 1
<b>FORTH BRIDGE</b>				
4% Deb. ....	107	103	104	—
4% Guar. ....	106½	102	103	—
<b>L.P.T.B.</b>				
4½% "A" ....	125	119	121½	—
5% "A" ....	133½	128	131½	—
3½% Guar. (1967-72) ....	99½	98	99	—
5% "B" ....	124½	118½	120½	—
"C" ....	72½	64½	62	— 2
<b>MERSEY</b>				
Ord. ....	35½	33	32	—
3% Perp. Pref. ....	72	66	69	—
4% Perp. Deb. ....	105	103	104	—
3% Perp. Deb. ....	85½	79½	80	—
<b>IRELAND*</b> <b>BELFAST &amp; C.D.</b>				
Ord. ....	9	6	7½	—
<b>G. NORTHERN</b>				
Ord. ....	33½	19	33	— ½
Pref. ....	49	37	51½	— 2
Guar. ....	70	57½	81	+ 2
Deb. ....	90½	81½	97½	+ 2
<b>IRISH TRANSPORT</b>				
Common ....	—	—	79½	+ 2
3% Deb. ....	—	—	101	+ ½

\* Latest available quotation



British troops, assisted by Dutch labour, have bridged the River IJssel at Deventer, Holland, and troop trains from Hanover crossed the bridge on November 1. Major-General D.I. McMullen, who opened the bridge, is seen (on right) above, after the ceremony

## OFFICIAL NOTICES

*None of the vacancies on this page relates to a man between the ages of 18 and 50 inclusive unless he is excepted from the provisions of the Control of Engagmenent Order, 1945, or the vacancy is for employment excepted from the provisions of that Order.*

**A**SSISTANT DRAUGHTSMAN, with good training and experience, required for Carriage and Wagon Department of Consulting Engineers' London office. Good prospects. Age 30-35. Replies, which will be treated in confidence, should give full particulars of training and experience, and state age and salary required.—Write Box "Q.E.P." 95, Bishopsgate, London, E.C.2.

December 17 next, in respect of the half-year ended June 30, 1944. The committee appointed under the scheme of arrangement has extended the moratorium period until December 31, 1946.

**L.M.S.R. (Extension of Time) Order.**—The Minister of War Transport has made the London Midland & Scottish Railway (Extension of Time) Order, 1945 (S.R. & O. 1945 No. 1331). Copies of the Order may be obtained from the Clerk of Stationery, Ministry of War Transport, Berkeley Square House, Berkeley Square, London, W.1, price 1d. (post free 2d.).

**Canton-Kowloon Railway Service Restored.**—Reuters reports that it was announced in Hong Kong on November 15 that a Canton-Kowloon daily railway service was to start immediately, subsequent to a Decree of the previous day permitting unrestricted entry of non-Europeans into the Colony. Reuters adds that the Canton-Kowloon Railway was damaged extensively before the Japanese surrender, partly by bombing and partly by guerrilla attacks.

**Prevention is Better than Claims on the G.W.R.**—Railwaymen of all grades are collaborating with the G.W.R. in a drive to reduce claims for loss of or damage to goods, and to check pilfering. Throughout the system inspectors, foremen, shunters, carters, checkers, loaders and porters, the men who handle the goods, meet the company's

**TO OFFICE AND WORKS EXECUTIVES,** please apply for our complete catalogue which is now available, together with 1946 Calendar (enclose 1d. stamp to comply) so that your records of Plant, Electrodes and Accessories manufactured are up to date.—**PETBOW LIMITED**, Watford, Herts.

**ELECTRIC TRACTION ENGINEER** required by Firm of Consulting Engineers in London to prepare specifications for electrical and diesel-electric equipments and generally supervise the carrying out of contracts for traction schemes. Applications stating age, details of training and experience and salary required to Box 3011, *The Railway Gazette*, 33, Tothill Street, S.W.1.

officials frequently and discuss the problem. These discussions which have proved of great value to the goods department, are now being intensified so far as consignments conveyed by passenger trains are concerned. Unsuitable and inadequate packing, bad labelling, and failure to remove old labels are among the principal causes of claims and delayed delivery of goods. The staff call attention to many such instances, and senders are requested to improve their methods.

**Kitson & Co. Ltd.: Petition for Winding-up.**—Notice is given in *The London Gazette* of November 20 that a petition for the winding-up of Kitson & Co. Ltd. by the High Court of Justice was presented on November 15, 1945, to the said court by Montie Phillip Arnold, of 25, Southampton Street, Strand, London, W.C.2, and that the petition is directed to be heard before the court sitting at the Royal Courts of Justice, Strand, London, on December 3, 1945. Any creditor or contributory of the company desirous to support or oppose the making of an Order on the petition may appear at the time of hearing in person or by his counsel for that purpose; and a copy of the petition will be furnished to any creditor or contributory of the company requiring it by Hicks Arnold & Company, 25, Southampton Street, Strand, W.C.2, Solicitors for the petitioner on payment of the regulation charge.

**L.M.S.R. Locomotive Named "City of Coventry"**

*The City of Coventry presented plaques of its coat of arms to the L.M.S.R. and these were placed on the company's streamline "Coronation" class locomotive, No. 6240, when it was named "City of Coventry" at Coventry Station on November 6 by the Mayor, who is shown above with Sir Harold Hartley, Vice-President, L.M.S.R.*

**Universal Directory of Railway Officials and Railway Year Book****51st Annual Edition, 1945-46****Price 20/- net.****Now Ready**

**THE DIRECTORY PUBLISHING CO., LTD.**  
33, Tothill Street, London, S.W.1.

**Contracts and Tenders**

Below is a list of orders placed recently by the Egyptian State Railways:—

J. Stone & Co. Ltd.: Belting dynamo and laces.

Thomas Turton & Sons Ltd.: Axes.

Arthur Balfour & Co. Ltd.: Files and screws.

Midland Electric Manufacturing Co., Ltd.: Cut-out bases.

Siemens Electric Lamps & Supplies Limited: Bayonet cap lampholders.

Falk Stadelmann & Co. Ltd.: White porcelain insulators.

National Gas & Oil Engine Co. Ltd.: Spares for diesel engine atomisers.

Whitecross Co. Ltd.: Steel wire cables, etc.

Buck & Hickman Limited: Piano wire.

Richard Johnson & Nephew Limited: Barbed and copper wire.

Thomas Locker & Co. Ltd.: Wire cloth.

James Walker & Co. Ltd.: Joints for axleboxes.

Standard Telephones & Cables Limited: Springs.

Thorn & Hoddle Limited: Solid brass machine nipples.

Lamp Manufacturing & Railway Supplies Limited: Oil lamps.

Edgar Allen & Co. Ltd.: Drills.

B.B. Chemical & Co. Ltd.: Special dressing.

British Oxygen Co. Ltd.: Magnetic rollers.

English Steel Corporation Limited: Die blocks.

National Gas & Oil Engine Co. Ltd.: Engine spares.

Herbert Hunt & Sons Ltd.: Screwing and cutting tools.

Gresham & Craven Limited: Steam cone.

Sentinel Shrewsbury Limited: Steam rail car spares, tubes and fittings.

Holden & Brookes Limited: Nozzles.

Clyde Crane & Booth Limited: Cast steel bevels.

C. C. Wakefield & Co. Ltd.: Nut for oil outlet.

Vacuum Brake Co. Ltd.: Steam rail car spares, tee pieces.

Vacuum Oil Co. Ltd.: Steam rail car spares.

George Tuston Platts & Co. Ltd.: Volute springs.

Siemens Brothers & Co. Ltd.: Relay springs.

Thomas Broadbent & Sons Ltd.: Rail wheels.

British Thomson-Houston Co. Ltd.: Connectors base and back.

Tubes Limited: Tubes and fittings.

Power Flexible Tubing Co. Ltd.: Tubes and fittings.

Superheater & Co. Ltd.: Superheater elements for engines.

**Forthcoming Meetings**

December 4 (Tue).—The Institution of Civil Engineers, Gt. George Street, Westminster, S.W.1. 5.30 p.m.  
"Menai Bridge Reconstruction," by Mr. G. A. Maunsell, B.Sc., M.Inst.C.E.

December 7 (Fri).—The Institution of Signal Engineers, at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2. 6 p.m. "Subsidiary Signals—Their Development and Some Problems Arising from Their Use," by Mr. F. B. Egginton (L.N.E.R.).

## Railway Stock Market

International and home political uncertainties were reflected by an easier tendency in stock markets, but movements were mostly small, and because of increased activity in South African mining shares, the volume of business has been well maintained. British Funds receded, partly because of the continued belief that the next step in the Government cheaper money policy may follow the impending termination of the Thanksgiving Savings Drive. Moreover, hopes that the U.S. loan terms may be announced shortly again made for a waiting attitude, and selling was reported to transfer into 3 per cent. Savings Bonds (1965-75). Most other sections, with the notable exception of South African mining shares, tended to be influenced by the trend in gilt-edged.

Leading industrials lost a few pence, after firming up on future benefits from the abolition of double taxation arising from the new basis of Dominion tax relief. Among the nationalisation sections, electric supply and road transport shares lost further ground, colliery shares eased, and home railway junior stocks reflected reduced demand, fractional declines resulting. Home rail prior charges again receded; but little selling was reported. When the trend in investment stocks is assisted by a sustained rally in British Funds, it would seem that yield considerations are likely to draw attention to home rail prior charges.

The behaviour of home rails this week must be read in relation to that of markets generally. It does not reflect any less hopeful views as to compensation

terms under nationalisation schemes. Indeed, although prevailing views must still be regarded as guesswork, there seems a strong case for the belief that current prices of home railway stocks by no means discount a "fair compensation" basis, and that a 6 per cent. or 7 per cent. yield basis for junior stocks on dividends payable under the existing fixed rental would not be unreasonable. With the turn of the year it is possible dividend considerations may draw increasing attention to home rails. L.M.S.R. ordinary and Southern deferred, on which interim payments are not made, carry the whole dividends for 1945, and if allocations to contingency reserves can be cut, there may be possibilities of slightly higher payments on L.M.S.R. ordinary and L.N.E.R. second preference, although this is apparently not expected in responsible quarters.

Compared with a week ago, Great Western has moved back from 55½ to 55, and the 5 per cent. preference was no better than 105½, a further decline of 1½; the guaranteed stock declined from 121 to 119, and the 4 per cent. debentures lost 2½ points at 108. L.M.S.R. receded from 28 to 27½, the 1923 preference from 58 to 57, and the senior preference from 77½ to 77; the guaranteed stock at 99½, and the 4 per cent. debentures at 104 were also lower on balance.

Reflecting the prevailing trend, L.N.E.R. second preference lost ground at 28½, compared with 28½, and the first preference yielded a point at 56. Southern deferred was 23½, as against 23½ a week ago, and the preferred 73½, compared with

74; the 5 per cent. preference moved back a point to 105, and the 4 per cent. debentures were also lower at 107½, compared with 110.

London Transport "A" and "B" stocks were again firm, contrasting with the lower levels for prior charges of the main-line railways; but on the other hand, the "C" stock was two points down at 62. Elsewhere, Metropolitan Assented eased fractionally to 59½. Metropolitan Surplus Lands shares further strengthened to 11s. 3d.

A better tendency developed in Argentine stocks, encouraged by the improved figures for the past year; Buenos Ayres Great Southern at 11½ fully regained an earlier decline; the 5 per cent. preference strengthened to 24 and the 4 per cent. debentures were firmer at 63. Buenos Ayres Western stocks attracted buyers, the ordinary improving to 10½, the 4½ per cent. preference to 27½ and the 4 per cent. debentures to 54xd. Central Argentine ordinary was also better at 7½, the 4 per cent. debentures firmer at 53xd, and the 5 per cent. debentures at 59 regained part of an earlier decline. Buenos Ayres & Pacific issues reflected the better tendency with the 4½ per cent. debentures 56½ and the 5 per cent. debentures 31. Elsewhere, however, United of Havana 1906 debentures at 15½ remained under the influence of disappointment with the results. A feature was activity in Beira Railway certificates which rose further to 32s. 6d. Canadian Pacifics showed little change. French railway sterling bonds were better on the more encouraging political developments.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week			No. of Week	Aggregate traffics to date			Shares or Stock	Prices						
			Total this year	Inc. or dec. compared with 1943/4			No. of Week	Totals			Increase or decrease	Highest 1944	Lowest 1944	Nov. 27 1945	Yield % (see Note)		
				1944/5	1943/4			1944/5	1943/4								
South & Central America																	
Antofagasta (Chili) & Bolivia	834	18.11.45	29,590	-	650	46	1,355,960	1,311,310	+	44,650	Ord. Stk.	13½	9½	10	Nil		
Argentine North Eastern	753	17.11.45	17,325	-	1,069	20	381,806	355,669	+	26,137	Bonds	19½	15	8	Nil		
Bolivia	174	Oct., 1945	4,472	-	1,028	43	48,577	53,255	-	4,678	6 p.c. Deb.	18½	7½	6½	Nil		
Brazil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Buenos Ayres & Pacific	2,771	17.11.45	143,750	+	9,375	20	2,521,250	2,447,875	+	73,375	Ord. Stk.	7½	3½	5½	Nil		
Buenos Ayres Great Southern	5,080	17.11.45	202,000	+	7,125	20	3,797,875	3,491,625	+	306,250	Ord. Stk.	14½	9½	11½	Nil		
Buenos Ayres Western	1,924	17.11.45	73,812	-	2,937	20	1,419,312	1,359,812	+	59,500	"	13½	9½	10½	Nil		
Central Argentine	3,700	10.11.45	190,356	+	16,459	19	3,597,447	3,352,703	+	244,704	Dfd.	10½	6½	8	Nil		
Do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Cent. Uruguay of M. Video	972	10.11.45	39,916	+	9,334	19	658,174	586,577	+	71,597	Ord. Stk.	5½	4	6½	Nil		
Costa Rica	262	Sept., 1945	28,214	+	7,228	14	91,367	265,443	+	36,092	Stk.	17½	14½	15	Nil		
Dorada	70	Oct., 1945	28,400	-	372	43	30,535	237,415	+	35,720	I Mt. Deb.	101	101	101½	£5 18/3		
Entre Rios	808	17.11.45	26,412	+	2,506	20	527,275	469,344	+	57,931	Ord. Stk.	6½	4½	6½	Nil		
Great Western of Brazil	1,030	17.11.45	34,400	+	7,000	46	1,154,700	1,002,900	+	151,800	Ord. Stk.	38½	23/3	26/6	Nil		
International of Cl. Amer.	794	Sept., 1945	\$615,723	+	\$122,464	39	\$6,867,641	\$5,799,919	+	\$1,067,722	—	—	—	—	—		
Interoceanic of Mexico	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
La Guaira & Caracas..	22½	Oct., 1945	6,135	-	752	43	62,380	78,218	-	15,838	5 p.c. Deb.	1½	1½	1	Nil		
Leopoldina	1,918	17.11.45	58,001	+	19,925	46	2,462,575	2,138,733	+	323,842	Ord. Stk.	5½	4½	6½	Nil		
Mexico	483	14.11.45	ps613,900	+	ps168,600	19	ps2,678,800	ps. 9,520,500	+	ps. 3,158,300	Ord. Stk.	4½	4½	5½	Nil		
Midland Uruguay	319	Oct., 1945	18,170	+	2,475	17	73,821	67,021	+	6,810	—	—	—	—	—		
Nitrato	382	15.11.45	8,293	-	3,139	45	164,215	161,156	+	3,059	Ord. Sh.	75/10	65/10	74/—	£3 11/0		
North Western of Uruguay	113	Sept., 1945	4,379	-	1,042	13	15,562	18,480	—	2,918	—	—	—	—	—		
Paraguay Central	274	16.11.45	£52,074	—	£15,579	20	£1,194,889	£1,172,205	+	£22,684	Pr. Li. Stk.	79½	68	78½	£7 12/10		
Peruvian Corporation	1,059	Oct., 1945	142,092	+	9,592	17	564,925	508,152	+	56,773	Pref.	9	10	8½	Nil		
Salvador	100	Sept., 1945	c\$28,000	+	c 10,000	12	c 271,000	c 24,000	+	c 24,000	Ord. Stk.	21/3	13/9	16/3	Nil		
San Paulo	153½	...	156	...	3,025	17	9,690	10,735	—	1,045	Ord. Sh.	4	2½	1½	Nil		
Talat	...	...	...	...	45,584	19	825,875	886,147	—	60,272	Ord. Stk.	—	—	—	—		
United of Havana	1,301	10.11.45	2,274	—	790	17	7,317	5,683	+	1,634	—	—	—	—	—		
Uruguay Northern	73	Oct., 1945	...	...	...	...	...	...	...	...	...	...	...	...	...		
Canada	Canadian National	23,569	Oct., 1945	7,326,200	—	173,000	43	72,390,200	73,128,800	—	338,600	Ord. Stk.	17½	13½	20½	2½	
Canadian Pacific	17,030	21.11.45	1,183,000	—	93,400	46	56,627,600	56,972,400	—	344,800	—	—	—	—	—		
Various	Barsi Light†	202	Oct., 1945	21,412	—	3,457	29	166,642	165,000	+	1,642	Ord. Stk.	129½	97½	123½	£3 11/2	
Beira	204	Sept., 1945	73,712	+	2,422	52	920,575	971,166	—	50,591	B. Deb.	63½	58	66½	Nil		
Egyptian Delta	607	10.10.45	17,865	—	2,831	28	308,189	348,417	—	40,228	Prf. Sh.	7½	5½	9½	£5 18/10		
Manila	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Midland of W. Australia	277	Sept., 1945	15,818	—	4,876	12	45,287	60,947	—	15,660	Inc. Deb.	101½	99½	95½	£4 3/9		
Nigeria	1,900	29.9.45	81,372	—	12,896	26	1,316,308	1,591,450	—	275,142	—	—	—	—	—		
Rhodesia	2,445	Sept., 1945	517,095	+	631	52	6,069,664	6,439,433	—	369,769	—	—	—	—	—		
South African	13,301	20.10.45	1,008,806	+	61,958	29	28,875,927	25,435,461	+	3,440,466	—	—	—	—	—		
Victoria	4,774	April, 1945	1,285,324	+	96,325	—	—	—	—	—	—	—	—	—	—		

Note. Yields are based on the approximate current price and are within a fraction of 1½. Argentine traffics are given in sterling calculated at 16 pesos to the £.

† Receipts are calculated at 1s. 6d. to the rupee.